(b) Each petition filed under this section must—

(1) Be submitted in duplicate to the Docket Clerk, Central File Room—Room 401, Federal Highway Administration, Donohoe Building, Sixth and D Streets SW., Washington, D.C. 20591;

(2) Set forth the text or substance of the rule or amendment proposed, or specify the rule that the petitioner seeks to have repealed, as the case may be;

(3) Explain the interest of the petitioner in the action requested;

(4) Contain any information and arguments available to the petitioner to support the action sought.

§ 216.33 Processing of petition.

(a) *General.* Each petition received under § 216.31 is referred to the Director of the Bureau. Unless the Administrator otherwise specifies, no public hearing, argument, or other proceeding is held directly on a petition before its disposition under this section.

(b) *Grants.* If the Administrator determines that the petition contains adequate justification, he initiates rulemaking action under this Subpart B.

(c) *Denials.* If the Administrator determines that the petition does not justify rule making, he denies the petition.

(d) *Notification.* Whenever the Administrator determines that a petition should be granted or denied, the Office of the Chief Counsel prepares a notice of that grant or denial for issuance to the petitioner, and the Administrator issues it to the petitioner.

§ 216.35 Petitions for reconsideration.

(a) Any interested person may petition the Administrator for reconsideration of any rule issued under this part. The petition must be submitted in twenty (20) legible copies to the Docket Clerk, Central File Room—Room 401, Federal Highway Administration, Donohoe Building, Sixth and D Streets SW., Washington, D.C. 20591, and received not later than thirty (30) days after publication of the rule in the FEDERAL REGISTER. Petitions filed after that time will be considered as petitions filed under § 216.31. The petition must contain a brief statement of the complaint and an explanation as to why compliance with the rule is not practicable, is unreasonable, or is not in the public interest.

(b) If the petitioner requests the consideration of additional facts, he must state the reason they were not presented to the Administrator within the prescribed time.

(c) The Administrator does not consider repetitious petitions.

(d) Unless the Administrator otherwise provides, the filing of a petition under this section does not stay the effectiveness of the rule.

§ 216.37 Proceedings on petitions for reconsideration.

The Administrator may grant or deny, in whole or in part, any petition for reconsideration without further proceedings. In the event he determines to reconsider any rule, he may issue a final decision on reconsideration without further proceedings, or he may provide such opportunity to submit comment or information and data as he deems appropriate. Whenever the Administrator determines that a petition should be granted or denied, he prepares a notice of the grant or denial of a petition for reconsideration, for issuance to the petitioner, and issues it to the petitioner. The Administrator may consolidate petitions relating to the same rule.

SUBCHAPTER C—MOTOR VEHICLE SAFETY REGULATIONS

PART 255—INITIAL FEDERAL MOTOR VEHICLE SAFETY STANDARDS

Subpart A—General

Subpart B—Standards

AUTHORITY: The provisions of this Part 255 issued under secs. 103, 119, 80 Stat. 719, 728; 15 U.S.C. 1392, 1407.

SOURCE: The provisions of this Part 255 appear at 32 F.R. 2408, Feb. 3, 1967, unless otherwise noted.

Subpart A—General

§ 255.1 Scope.

This part contains the initial Federal Motor Vehicle Safety Standards for motor vehicles and motor vehicle equipment

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established under section 103 of the National Traffic and Motor Vehicle Safety Act of 1966 (80 Stat. 718).

§ 255.3 Definitions.

(a) *Statutory definitions.* All terms defined in section 102 of the Act are used in their statutory meaning.

(b) *Other definitions.* As used in this part—

"Act" means the National Traffic and Motor Vehicle Safety Act of 1966 (80 Stat. 718).

"Approved," unless used with reference to another person, means approved by the Secretary.

"Boat trailer" means a trailer designed with cradle-type mountings to transport a boat and configured to permit launching of the boat from the rear of the trailer.

"Bus" means a motor vehicle with motive power, except a trailer, designed for carrying more than 10 persons.

"Curb weight" means the weight of a motor vehicle with standard equipment; maximum capacity of engine fuel, oil, and coolant; and, if so equipped, air conditioning and additional weight optional engine.

"Designated seating capacity" means the number of designated seating positions provided.

"Designated seating position" means any plan view lateral location intended by the manufacturer to provide seating accommodation for a person at least as large as a 5th percentile adult female, except auxiliary seating accommodations such as temporary or folding jump seats.

"Driver" means the occupant of a motor vehicle seated immediately behind the steering control system.

"Emergency brake" means a mechanism designed to stop a motor vehicle after a failure of the service brake system.

"5th percentile adult female" means a person possessing the dimensions and weight of the 5th percentile adult female specified for the total age group in Public Health Service Publication No. 1000, Series 11, No. 8, "Weight, Height, and Selected Body Dimensions of Adults."

"Forward control" means a configuration in which more than half of the engine length is rearward of the foremost point of the windshield base and the steering wheel hub is in the forward quarter of the vehicle length.

"H point" means the mechanically hinged hip point of a manikin which simulates the actual pivot center of the human torso and thigh, described in SAE Recommended Practice J826, "Manikins for Use in Defining Vehicle Seating Accommodations," November 1962.

"Head impact area" means all nonglazed surfaces of the interior of a vehicle that are statically contactable by a 6.5–inch diameter spherical head form of a measuring device having a pivot point to "top-of-head" dimension infinitely adjustable from 29 to 33 inches in accordance with the following procedure, or its graphic equivalent:

(a) At each designated seating position, place the pivot point of the measuring device—

(1) For seats that are adjustable fore and aft, at—

(i) The seating reference point; and

(ii) A point 5 inches horizontally forward of the seating reference point and vertically above the seating reference point an amount equal to the rise which results from a 5–inch forward adjustment of the seat or 0.75 inch; and

(2) For seats that are not adjustable fore and aft, at the seating reference point.

(b) With the pivot point to "top-of-head" dimension at each value allowed by the device and the interior dimensions of the vehicle, determine all contact points above the lower windshield glass line and forward of the seating reference point.

(c) With the head form at each contact point, and with the device in a vertical position if no contact point exists for a particular adjusted length, pivot the measuring device forward and downward through all arcs in vertical planes to 90° each side of the vertical longitudinal plane through the seating reference point, until the head form contacts an interior surface or until it is tangent to a horizontal plane 1 inch above the seating reference point, whichever occurs first.

"Motorcycle" means a motor vehicle with motive power having a seat or saddle for the use of the rider and designed to travel on not more than three wheels in contact with the ground.

"Motor-driven cycle" means a motorcycle with a motor that produces 5-brake horsepower or less.

"Multipurpose passenger vehicle" means a motor vehicle with motive power, except a trailer, designed to carry 10 persons or less which is constructed either on a truck chassis or with special

features for occasional off-road operation.

"Occupant" means a person or manikin seated in the vehicle, and, unless otherwise specified in an individual standard, having the dimensions and weight of the 95th percentile adult male.

"Parking brake" means a mechanism designed to prevent the movement of a stationary motor vehicle.

"Passenger car" means a motor vehicle with motive power, except a multipurpose passenger vehicle, motorcycle, or trailer, designed for carrying 10 persons or less.

"Pelvic impact area" means that area of the door or body side panel adjacent to any outboard designated seating position which is bounded by horizontal planes 7 inches above and 4 inches below the seating reference point and vertical transverse planes 8 inches forward and 2 inches rearward of the seating reference point.

"Pole trailer" means a motor vehicle without motive power designed to be drawn by another motor vehicle and attached to the towing vehicle by means of a reach or pole, or by being boomed or otherwise secured to the towing vehicle, for transporting long or irregularly shaped loads such as poles, pipes, or structural members capable generally of sustaining themselves as beams between the supporting connections.

"School bus" means a bus designed primarily to carry children to and from school, but not including buses operated by common carriers in urban transportation of school children.

"Seating reference point" means the manufacturer's design reference point which—

(a) Establishes the rearmost normal design driving or riding position of each designated seating position in a vehicle;

(b) Has coordinates established relative to the designed vehicle structure;

(c) Simulates the position of the pivot center of the human torso and thigh; and

(d) Is the reference point employed to position the two dimensional templates described in SAE Recommended Practice J826, "Manikins for Use in Defining Vehicle Seating Accommodations," November 1962.

"Semitrailer" means a trailer, except a pole trailer, so constructed that a substantial part of its weight rests upon or is carried by another motor vehicle.

"Service brake" means the primary mechanism designed to stop a motor vehicle.

"Torso line" means the line connecting the "H" point and the shoulder reference point as defined in SAE Recommended Practice J787g, "Motor Vehicle Seat Belt Anchorage," September 1966.

"Trailer" means a motor vehicle with or without motive power, designed for carrying persons or property and for being drawn by another motor vehicle.

"Trailer converter dolly" means a trailer chassis equipped with one or more axles, a lower half of a fifth wheel and a drawbar.

"Truck" means a motor vehicle with motive power, except a trailer, designed primarily for the transportation of property or special purpose equipment.

"Truck tractor" means a truck designed primarily for drawing other motor vehicles and not so constructed as to carry a load other than a part of the weight of the vehicle and the load so drawn.

"95th percentile adult male" means a person possessing the dimensions and weight of the 95th percentile adult male specified in Public Health Service Publication No. 1000, Series 11, No. 8, "Weight, Height, and Selected Body Dimensions of Adults."

[32 F.R. 2408, Feb. 3, 1967, as amended at 32 F.R. 11776, Aug. 16, 1967; 32 F.R. 18033, Dec. 16, 1967]

§ 255.5 Matter incorporated by reference.

(a) *Incorporation.* There are hereby incorporated, by reference, into this part, all materials referred to in any standard in Subpart B of this part that are not set forth in full in the standard. These materials are thereby made part of this regulation. Materials subject to change are incorporated as they are in effect on the date of adoption of this part, unless the reference to them provides otherwise.

(b) *Availability.* The materials incorporated by reference, other than acts of Congress and matter published elsewhere in the FEDERAL REGISTER, are available as follows:

(1) *Standards of the Society of Automotive Engineers (SAE).* They are published by the Society of Automotive Engineers, Inc. Information and copies may be obtained by writing to: Society of Automotive Engineers, Inc., 485 Lexington Avenue, New York, N.Y. 10017.

(2) *Standards of the American Society for Testing and Materials.* They are published by the American Society for Testing and Materials. Information on copies may be obtained by writing to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103.

(3) *Standards of the United States of America Standards Institute.* They are published by the United States of America Standards Institute. Information and copies may be obtained by writing the United States of America Standards Institute, 10 East 40th Street, New York, N.Y. 10016.

(4) *Data from the National Health Survey, Public Health Publication No. 1000, Series 11, No. 8.* This is published by the U.S. Department of Health, Education, and Welfare. Copies may be obtained for a price of 35 cents from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

All incorporated materials are available for inspection in the Docket Room 3807, National Traffic Safety Agency, U.S. Department of Commerce, Washington, D.C. 20230.

§ 255.7 Applicability.

(a) *General.* Each standard set forth in Subpart B of this part applies according to its terms to new motorcycles and trailers regardless of weight and to all other new motor vehicles over 1,000 pounds curb weight, or items of motor vehicle equipment, the manufacture of which is completed after the effective date of the standard.

(b) *Military vehicles.* No standard applies to a vehicle or item of equipment manufactured for, and sold directly to, the Armed Forces of the United States in conformity with contractual specifications.

(c) *Export.* No standard applies to a vehicle or item of equipment in the circumstances provided in section 108(b)(5) of the Act (15 U.S.C. 1397(b)(5)).

§ 255.9 Separability.

If any standard established in this part or its application to any person or circumstance is held invalid, the remainder of the part and the application of that standard to other persons or circumstances is not affected thereby.

§ 255.11 Equivalent demonstration procedure.

An approved equivalent may be substituted for any required destructive demonstration procedure.

Subpart B—Standards

§ 255.21 Federal Motor Vehicle Safety Standards.

The Federal Motor Vehicle Safety Standards are set forth in this subpart.

Motor vehicle safety standard numbers and titles

101 Control Location and Identification—Passenger Cars
102 Transmission Shift Lever Sequence, Starter Interlock, and Transmission Braking Effect—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
103 Windshield Defrosting and Defogging—Passenger Cars and Multipurpose Passenger Vehicles
104 Windshield Wiping and Washing Systems—Passenger Cars
105 Hydraulic Service Brake, Emergency Brake, and Parking Brake Systems—Passenger Cars
106 Hydraulic Brake Hoses—Passenger Cars and Multipurpose Passenger Vehicles
107 Reflecting Surfaces—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
108 Lamps, Reflective Devices, and Associated Equipment—Multipurpose Passenger Vehicles, Trucks, Trailers, and Buses, 80 or More Inches Wide Overall
111 Rearview Mirrors—Passenger Cars and Multipurpose Passenger Vehicles
203 Impact Protection for the Driver From the Steering Control System—Passenger Cars
204 Steering Control Rearward Displacement—Passenger Cars
205 Glazing Materials—Passenger Cars, Multipurpose Passenger Vehicles, Motorcycles, Trucks, and Buses
206 Door Latches and Door Hinge Systems—Passenger Cars
207 Anchorage of Seats—Passenger Cars
208 Seat Belt Installations—Passenger Cars
209 Seat Belt Assemblies—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
210 Seat Belt Assembly Anchorages—Passenger Cars
211 Wheel Nuts, Wheel Discs, and Hub Caps—Passenger Cars and Multipurpose Passenger Vehicles
301 Fuel Tanks, Fuel Tank Filler Pipes, and Fuel Tank Connections—Passenger Cars

MOTOR VEHICLE SAFETY STANDARD NO. 101

CONTROL LOCATION AND IDENTIFICATION—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies the requirements for location and identification of certain controls to facilitate their selection and ensure their accessibility.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements.*

S3.1 *Location.* Control of the following shall be provided within operational reach of a person seated at the controls, restrained by a Type 2 seat belt system with a reasonable degree of slack in the upper torso portion of the belt assembly—

(a) Steering;
(b) Horn;
(c) Transmission, except transfer case;
(d) Ignition;
(e) Headlamps;
(f) Turn signal;
(g) Windshield wiping system;
(h) Windshield washing system;
(i) Choke (if manual); and,
(j) Driver's sun visor.

S3.2 *Identification.* The following controls, when mounted on the instrument panel, shall be identified to permit recognition—

(a) Headlamps;
(b) Windshield wiping system;
(c) Windshield washing system;
(d) Windshield defrosting and defogging system; and,
(e) Choke (if manual).

MOTOR VEHICLE SAFETY STANDARD NO. 102

TRANSMISSION SHIFT LEVER SEQUENCE, STARTER INTERLOCK, AND TRANSMISSION BRAKING EFFECT—PASSENGER CARS, MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, AND BUSES

S1. *Purpose and scope.* This standard specifies the requirements for the transmission shift lever sequence, a starter interlock, and for a braking effect of automatic transmissions, to reduce the likelihood of shifting errors, starter engagement with vehicle in drive position, and to provide supplemental braking at speeds below 25 miles per hour.

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

S3. *Requirements.*

S3.1 *Automatic transmissions.*

S3.1.1 *Location of transmission shift lever positions on passenger cars.* A neutral position shall be located between forward drive and reverse drive positions. If a steering-column-mounted transmission shift lever is used, movement from neutral position to forward drive position shall be clockwise. If the transmission shift lever sequence includes a park position, it shall be located at the end, adjacent to the reverse drive position.

S3.1.2 *Transmission braking effect.* In vehicles having more than one forward transmission gear ratio, one forward drive position shall provide a greater degree of engine braking than the highest speed transmission ratio at vehicle speeds below 25 miles per hour.

S3.1.3 *Starter interlock.* The engine starter shall be inoperative when the transmission shift lever is in a forward or reverse drive position.

S3.2 *Automatic and manual transmissions.* Identification of shift lever positions of automatic transmissions and of the shift lever pattern of manual transmissions, except three forward speed manual transmissions having the standard "H" pattern, shall be permanently displayed in view of the driver.

MOTOR VEHICLE SAFETY STANDARD NO. 103

WINDSHIELD DEFROSTING AND DEFOGGING—PASSENGER CARS AND MULTIPURPOSE PASSENGER VEHICLES

S1. *Purpose and scope.* This standard specifies requirements for providing vision through the windshield during frosting and fogging conditions.

S2. *Application.* This standard applies to passenger cars and multipurpose passenger vehicles manufactured for sale in the Continental United States.

S3. *Requirement.* A windshield defrosting and defogging system shall be provided.

MOTOR VEHICLE SAFETY STANDARD NO. 104

WINDSHIELD WIPING AND WASHING SYSTEMS—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies requirements for windshield wiping and washing systems.

S2. *Application.* This standard applies to passenger cars of 68 or more inches overall width.

S3. *Definitions.*

"Glazing surface reference line" means the line of intersection of the glazing surface and a horizontal plane 25 inches above the driver's "H" point as indicated on Figure 1 of SAE Recommended Practice J903a.

"Plan view reference line" means:

1. For bench type seats, a line outboard of the steering wheel centerline that is parallel to the vehicle centerline at a distance 0.15 times the difference between one-half of the shoulder room dimension indicated on Figure 2 of SAE Recommended Practice J903a and the distance from steering wheel centerline to car centerline.

2. For individual type seats, a line that is parallel to the vehicle centerline through the center of the seat.

S4. *Requirements.*

S4.1 *Windshield wiping system.*

S4.1.1 *General characteristics.* A power-driven windshield wiping system shall be provided that—

(a) Meets the performance requirements of S4.1.2; and,

(b) Provides two or more frequencies or speeds at least one of which exceeds 45 cycles per minute regardless of engine load.

S4.1.2 *Wiped area.* When tested wet in accordance with Society of Automotive Engineers Recommended Practice J903a, "Passenger Car Windshield Wiper Systems," May 1966, the windshield wiping system shall cleanly wipe the percentage specified in Column 2 of Table I of that area determined in accordance with S4.1.2.1 listed in Column 1 that is not within 1 inch of the edge of the glazed area.

S4.1.2.1 The glazing surface reference line and the plan view reference line shall be established with the driver's seat in the rearmost position. Areas A, B, and C shall be established using the angles specified in Table I applied as shown in Figures 1 and 2 of Society of Automotive Engineers Recommended Practice J903a, "Passenger Car Windshield Wiper Systems," May 1966.

TABLE I

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6
Area	Minimum percent to be wiped	Angles in degrees			
		Left	Right	Up	Down
A	80	18	56	10	5
B	94	14	53	5	3
C	99	10	15	5	1

S4.2 *Windshield washing system.* A windshield washing system shall be provided that meets the requirements of SAE Recommended Practice J942, "Passenger Car Windshield Washer Systems," November 1965.

MOTOR VEHICLE SAFETY STANDARD NO. 105

HYDRAULIC SERVICE BRAKE, EMERGENCY BRAKE, AND PARKING BRAKE SYSTEMS—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies requirements for hydraulic service brake, emergency brake, and parking brake systems intended to ensure adequate braking performance under normal and emergency conditions.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.* "Pressure component" means any internal component of the brake master cylinder or master control unit, wheel brake cylinder, brake line, brake hose, or equivalent, except vacuum assist components.

S4. *Requirements.*

S4.1 *Service brake system.* The performance ability of the fully operational service brake system for passenger cars shall be not less than that described in section D of Society of Automotive Engineers Recommended Practice J937, "Service Brake System Performance Requirements—Passenger Car," June 1966, and tested in accordance with SAE Recommended Practice J843a, "Brake System Road Test Code—Passenger Car," June 1966.

S4.2 *Emergency brake system.* Rupture or leakage-type failure of any single pressure component of the service brake system, except structural failures of the brake master cylinder body or effectiveness indicator body, shall not result in complete loss of function of the

vehicle brakes when force on the brake pedal is continued.

S4.2.1 *Emergency System Performance.* If failure of a pressure component or insufficient hydraulic fluid in the system causes loss of pressure in any part of the brake system, the remaining portion of the brake system shall provide a stop of the vehicle loaded in accordance with SAE Recommended Practice J843a, June 1966, from a speed of 60 m.p.h., in not more than 646 feet, without pulling or swerving to the extent that would cause the vehicle to leave a level, 12-foot wide lane on a clean, dry, smooth, Portland cement concrete pavement (or other surface with equivalent coefficient of surface friction).

S4.2.2 *Emergency brake system effectiveness indication.* An electrically operated red light, mounted on the instrument panel in view of the driver, shall illuminate before or upon application of the brakes in the event of a hydraulic-type complete failure of a partial system. The indicator light shall have sufficient luminous intensity to be plainly visible in daylight and shall include a means for testing by the vehicle operator to ensure that the bulb is operable. No single failure in the internal components of the system effectiveness indicator, except the body of the device, shall permit the total loss of effectiveness of the braking system.

S4.3 *Parking brake system.* A parking brake system of a friction type with a solely mechanical means to retain engagement shall be provided that will hold the vehicle loaded in accordance with SAE Recommended Practice J843a, June 1966, to the limit of traction of the braked wheels in both forward and reverse directions on clean, dry, smooth, Portland cement concrete pavement (or other surface with equivalent coefficient of surface friction) of a 30 percent grade.

[32 F.R. 2408, Feb. 3, 1967, as amended at 32 F.R. 10072, July 8, 1967]

Motor Vehicle Safety Standard No. 106

Hydraulic brake hoses—passenger cars and multipurpose passenger vehicles

S1. *Purpose and scope.* This standard specifies requirements for hydraulic brake hoses that will reduce brake failures due to fluid leakage.

S2. *Application.* This standard applies to hydraulic brake hoses for use in passenger cars and multipurpose passenger vehicles.

S3. *Requirements.* Hydraulic brake hoses shall meet the requirements of Society of Automotive Engineers Standard J40b, "Automotive Brake Hoses," July 1966, except as follows:

(a) Delete "Water Absorption Test."

(b) Add "viscose" and "polyester" to acceptable braid materials.

(c) Specify the following dates for referenced ASTM tests:

(1) ASTM D 571—1955; and

(2) ASTM B 117—1964.

(d) Revise "End Connections" paragraph to read: "Exposed steel or brass end connections of the hose assembly shall be protected against rust or corrosion."

Motor Vehicle Safety Standard No. 107

Reflecting surfaces—passenger cars, multipurpose passenger vehicles, trucks, and buses

S1. *Purpose and scope.* This standard specifies reflecting surface requirements for certain vehicle components in the driver's field of view.

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

S3. *Definitions.*

"Field of view" means the area forward of a lateral vertical plane which is located tangent to the rearmost boundary of the SAE 99th percentile eye range contour of SAE Recommended Practice J941, November 1965. "Specular gloss" means the luminous fractional reflectance of a specimen at the specular direction.

S4. *Requirements.* The specular gloss of the surface of the materials used for the following bright metal components in the driver's field of view shall not exceed 40 units when measured by the 20° method of ASTM Standard D523–62T, June 1962—

(a) Windshield wiper arms and blades;

(b) Inside windshield mouldings;

(c) Horn ring and hub of steering wheel assembly; and

(d) Inside rearview mirror frame and mounting bracket.

MOTOR VEHICLE SAFETY STANDARD NO. 108

LAMPS, REFLECTIVE DEVICES, AND ASSOCIATED EQUIPMENT—MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, 80 OR MORE INCHES WIDE OVERALL

S1. *Purpose and scope.* This standard specifies requirements for lamps, reflective devices, and associated equipment, for signaling and to enable safe operation in darkness and other conditions of reduced visibility.

S2. *Application.* This standard applies to multipurpose passenger vehicles, trucks, trailers, and buses, that are 80 or more inches wide overall, except pole trailers and converter dollies.

S3. *Requirements.*

S3.1 *Equipment.*

S3.1.1 Except as provided in S.3.1.1.1 through S3.1.1.6, vehicles shall be equipped with lamps, reflective devices and associated equipment, in the number of units and designed to conform to the standards specified in Table I.

S.3.1.2 No additional lamp, reflective device, or associated equipment shall be installed if it impairs the effectiveness of the required equipment.

S3.1.1.1 Truck tractors need not be equipped with turn signal lamps mounted on the rear if the turn signal lamps at or near the front are so constructed (double-faced) and so located that they are visible to overtaking passing drivers.

S3.1.1.2 Intermediate side marker lamps and intermediate reflex reflectors are required only on vehicles that are 30 or more feet long overall.

S3.1.1.3 Boat trailers need not be equipped with front and rear clearance lamps located as specified in Table II, provided amber (to front) and red (to rear) clearance lamps are located on each side at or near the midpoint between front and rear of the trailer and indicate the extreme width of the trailer.

S3.1.1.4 Until June 1, 1968, boat trailers need not be equipped with identification lamps, clearance lamps, or front side-marker lamps.

S3.1.1.5 Two or more license plate lamps and two or more backup lamps may be used to fulfill the requirements specified in Table I for a single license plate lamp and a single backup lamp, respectively.

S3.1.1.6 Wedge base type bulb sockets conforming to SAE Recommended Practice J822, "Wedge Base Type Socket", April 1962, may be used in lieu of the bulb sockets specified by SAE Standard J567, "Bulb Sockets", August 1965.

S3.2 *Location of Lamps and Reflectors.*

S3.2.1 Except as provided in S3.2.1.1, S3.2.1.2, and S3.2.1.3, lamps and reflective devices required by S3.1 shall be installed in accordance with Table II.

S3.2.1.1 On Tractor-trailer combination vehicles, the requirement that intermediate reflex reflectors and intermediate side marker lamps be located at or near the midpoint between the side reflex reflectors applies only to the trailer.

S3.2.1.2 On truck tractors, the red rear reflex reflectors may be mounted on the back of the cab.

S3.2.1.3 The visibility provision for backup lamps need not be complied with until January 1, 1969.

S3.2.1.4 On trailers, the amber front side reflex reflector and amber front side-marker lamp may be located as far forward as practicable exclusive of the trailer tongue.

S3.3 *Lamp Combinations and Equipment Combinations.* Two or more lamps, reflective devices, and items of associated equipment may be combined if the requirements for each lamp, reflective device, and item of associated equipment are met, except that—

(a) No turn signal lamp may be combined optically with any lamp that produces a greater light intensity than the turn signal;

(b) No turn signal lamp may be combined optically with a stoplamp unless the stoplamp is extinguished when the turn signal is flashing; and

(c) No clearance lamp may be combinded optically with any taillamp or identification lamp.

S3.4 *Special Wiring Requirements.*

S3.4.1 A means for switching between lower and upper headlamp beams shall be provided in accordance with SAE Recommended Practice J564a, "Headlamp Beam Switching," April 1964, or with SAE Recommended Practice J565a, "Semi-Automatic Headlamp Beam Switching Devices," April 1965.

S3.4.2 A means for indicating to the driver when the upper beams of the headlamps are on shall be provided in accordance with SAE Recommended Practice J564a, April 1964.

S3.4.3 As a minimum the taillamps of vehicles manufactured on or after May 1, 1968, shall be illuminated when the headlamps are illuminated.

S3.4.4 Except as provided in S3.4.4.1 through S3.4.4.3, stoplamps shall be actuated upon application of any service brakes.

S3.4.4.1 Actuation of stoplamps is not required upon actuation of the trailer emergency brakes by means of either manual or automatic control on the towing vehicle.

S3.4.4.2 Stoplamps on a towing vehicle need not be actuated when service brakes are applied to the towed vehicle or vehicles only.

S3.4.4.3 Stoplamps that are combined optically with turn signal lamps need not be operable when the combination is in use as a turn signal or as a vehicular hazard warning signal.

S3.4.5 The vehicular hazard warning signal operating unit shall operate independently of the ignition switch, and when energized, cause all turn signal lamps to flash simultaneously.

S3.4.6 After January 1, 1969, on all vehicles required to carry backup lamps by this standard, the backup lamp shall be illuminated when the ignition switch is energized and reverse gear is engaged.

S3.4.7 Except on vehicles using variable load flashers, a means for indicating to the driver that the turn-signal system is energized shall be provided in accordance with SAE Standard J588d, "Turn-Signal Lamps", June 1966.

S3.5 *Lighting display.* When energized, each lamp specified in Table I shall, in normal operation, be steady-burning except turn-signal lamps and hazard warning signal lamps which shall flash. However, normally steady-burning lamps may be capable of being flashed for signaling purposes.

TABLE I—EQUIPMENT

Item	Number and color in accordance with Society of Automotive Engineers Standard J578a, April 1965, required on—			In accordance with SAE standard or recommended practice
	Multipurpose passenger vehicles, trucks (other than truck tractors), and buses	Trailers	Truck tractors	
Headlamps	2 white, 7-inch, Type 2 headlamp units; or 2 white, 5¾-inch, Type 1 headlamp units and 2 white, 5¾-inch, Type 2 headlamp units.		Same as trucks and buses.	J580a, June 1966, and J579a, August 1965.
Taillamps	2 red	2 red	2 red	J585c, June 1966.
Stoplamps	2 red to amber	2 red to amber	2 red to amber	J586b, June 1966.
License plate lamp	1 white	1 white	1 white	J587b, April 1964.
Reflex reflectors	4 Class A red; 2 Class A amber.	4 Class A red; 2 Class A amber.	2 Class A red (on rear); 2 Class A amber.	J594c, February 1965.
Side-marker lamps	2 red; 2 amber	2 red; 2 amber	2 amber	J592b, April 1964.
Backup lamp	1 white		1 white	J593b, May 1966.
Turn-signal lamps	2 Class A red to amber; 2 Class A amber.	2 Class A red to amber.	2 Class A red to amber; 2 Class A amber.	J588d, June 1966.
Turn-signal operating unit.	1		1	J589, April 1964.
Turn-signal flasher	1		1	J590b, October 1965.
Vehicular hazard warning signal operating unit.	1		1	J910, January 1966.
Vehicular hazard warning signal flasher.	1		1	J945, February 1966.
Identification lamps	3 amber and 3 red	3 red	3 amber	J592b, April 1964.
Clearance lamps	2 amber and 2 red	2 amber and 2 red	2 amber	J592b, April 1964.
Intermediate side marker lamps.	2 amber	2 amber		J592b, April 1964.
Intermediate reflex reflectors.	2 Class A amber	2 Class A amber		J594c, February 1965.

TABLE II—LOCATION OF EQUIPMENT

Item	Location on			Height above road surface measured from center of item on unloaded vehicle
	Multipurpose passenger vehicles, trucks (other than truck tractors), and buses	Trailers	Truck tractors	
Headlamps	Type 1 headlamps at the same height, 1 on each side of the vertical centerline; Type 2 headlamps at the same height, 1 on each side of the vertical centerline, as far apart as practicable.	----------	Same as trucks and buses.	Not less than 24 inches, nor more than 54 inches.
Taillamps	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.
Stoplamps	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.
License platelamp	At rear license plate	At rear license plate	At rear license plate	----------
Reflex reflectors	2 red—on rear, 1 on each side of the vertical centerline, as far apart as practicable and at the same level. 2 red—on sides, 1 on each side as far aft as practicable. 2 amber—on sides, 1 on each side as far forward as practicable.	2 red—on rear, 1 on each side of the vertical centerline, as far apart as practicable and at the same level. 2 red—on sides, 1 on each side as far aft as practicable. 2 amber—on sides, 1 on each side as far forward as practicable.	2 red—on rear, 1 on each side of the vertical centerline, as far apart as practicable and at the same level. 2 amber—on sides, 1 on each side as far forward as practicable.	Not less than 15 inches, nor more than 60 inches.
Side marker lamps	On each side: 1 red lamp as far to the rear as practicable and 1 amber lamp as far forward as practicable.	On each side: 1 red lamp as far to the rear as practicable and 1 amber lamp as far forward as practicable.	On each side: 1 amber lamp as far forward as practicable.	Not less than 15 inches.
Backup lamp	On rear, so that it is visible to pedestrians that are 6 feet or less in height from each position in the area to the rear of the vehicle, and from each position on either side of that rear area, that is 5 feet or less from the vehicle.	----------	On rear, so that it is visible to pedestrians that are 6 feet or less in height from each position in the area to the rear of the vehicle, and from each position on either side of that rear area, that is 5 feet or less from the vehicle.	----------
Turn-signallamps	At or near the front: 1 amber on each side of the vertical centerline, at the same level, and as far apart as practicable. On rear: 1 red to amber on each side of the vertical centerline, at the same level, and as far apart as practicable.	On rear: 1 red to amber on each side of the vertical centerline, at the same level, and as far apart as practicable.	At or near the front: 1 amber on each side of the vertical centerline, at the same level, and as far apart as practicable. On rear: 1 red to amber on each side of the vertical centerline, at the same level, and as far apart as practicable.	Not less than 15 inches.

TABLE II—LOCATION OF EQUIPMENT—Continued

Item	Location on			Height above road surface measured from center of item on unloaded vehicle
	Multipurpose passenger vehicles, trucks (other than truck tractors), and buses	Trailers	Truck tractors	
Identification lamps.	On front and rear: 3 lamps, amber in front, red in rear, grouped in a horizontal row, with lamp centers spaced not less than 6 inches, nor more than 12 inches, apart and mounted as close as practicable to the vertical centerline.	On rear: 3 red lamps grouped in a horizontal row with lamp centers spaced not less than 6 inches nor more than 12 inches apart and mounted as close as practicable to the vertical centerline.	On front: 3 amber lamps grouped in a horizontal row with lamp centers spaced not less than 6 inches, nor more than 12 inches, apart and mounted as close as practicable to the vertical centerline.	On front only: No part of the lamps or mountings may extend below the top of the vehicle's windshield.
Clearance lamps.	On front and rear: 1 lamp, amber in front, red in rear, as near as practicable to the upper left and right extreme edges of the vehicle. When the rear identification lights are mounted at the extreme height of the vehicle, rear clearance lamps may be mounted at optional heights.	On front and rear: 1 lamp, amber in front, red in rear, as near as practicable to the upper left and right extreme edges of the vehicle. When the rear identification lights are mounted at tbe extreme height of the vehicle, rear clearance lamps may be mounted at optional heights.	On front: 1 amber lamp as near as practicable to the upper left and right extreme edges of the vehicle.	----------
Intermediate side marker lamps.	On each side: 1 amber lamp located at or near the midpoint between the forward and aft side marker lamps.	On each side: 1 amber lamp located at or near the midpoint between the forward and aft side marker lamps.	----------	Not less than 15 inches.
Intermediate reflex reflectors.	On each side: 1 located at or near the midpoint between the forward and aft side reflex reflectors.	On each side: 1 located at or near the midpoint between the forward side reflex reflectors.	----------	Not less than 15 inches, nor more than 60 inches.

[32 F.R. 2408, Feb. 3, 1967, as amended at 32 F.R. 18033, Dec. 16, 1967]

EDITORIAL NOTE: The provisions of the following Motor Vehicles Safety Standard No. 108 will become effective Jan. 1, 1969:

MOTOR VEHICLE SAFETY STANDARD NO. 108

LAMPS, REFLECTIVE DEVICES, AND ASSOCIATED EQUIPMENT—PASSENGER CARS, MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, BUSES, TRAILERS, AND MOTORCYCLES

S1. *Purpose and scope.* This standard specifies requirements for lamps, reflective devices, and associated equipment, for signalling and to enable safe operation in darkness and other conditions of reduced visibility.

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, trucks, buses, trailers, and motorcycles, except pole trailers and trailer converter dollies.

S3. *Requirements.*

S3.1 *Equipment.*

S3.1.1 Except as provided in S3.1.1.1 through S3.1.1.11 vehicles shall be equipped with lamps, reflective devices, and associated equipment, in the numbers of units and designed to conform to the standards specified in—

(a) Table I for multipurpose passenger vehicles, trucks, trailers, and buses, of 80 or more inches overall width; or

(b) Table III for passenger cars; motorcycles; and multipurpose passenger vehicles, trucks, trailers, and buses, of less than 80 inches overall width.

S3.1.1.1 Truck tractors need not be equipped with turn-signal lamps mounted on the rear if the turn-signal lamps at or near the front are so constructed (double-faced) and so located that they are visible to overtaking passing drivers.

S3.1.1.2 Intermediate side-marker lamps and intermediate reflex reflectors are required only on vehicles of 80 or more inches overall width and 30 or more feet overall length.

S3.1.1.3 Reflective material conforming to Federal Specification L–S–300, "Sheeting and Tape, Reflective; Nonexposed Lens, Adhesive Backing", September 7, 1965, may be used in lieu of the side reflex reflectors, provided that this material, as used on the vehicle, meets the performance standards in Table I of SAE Standard J594c, "Reflex Reflectors", February 1965.

S3.1.1.4 Truck tractors of less than 80 inches overall width need not be equipped with more than two red Class A reflex reflectors (mounted on the rear), nor with any red rear side-marker devices.

S3.1.1.5 Passenger cars manufactured before January 1, 1970, shall be equipped with either two Class B red reflex reflectors or two Class A red reflex reflectors on the rear of the vehicle.

S3.1.1.6 Passenger cars; and multipurpose passenger vehicles, trucks, trailers, and buses, of less than 80 inches overall width manufactured before January 1, 1970, shall be equipped on each side of the vehicle, with at least one of the following combinations:

(a) 1 (red) Class A and 1 (amber) Class A reflex reflector;

(b) 1 red and 1 amber side-marker lamp;

(c) 1 red side-marker lamp and 1 (amber) Class A reflex reflector;

(d) 1 (red) Class A reflex reflector and 1 amber side-marker lamp.

S3.1.1.7 Passenger cars shall be equipped with turn-signal lamps that provide Class A photometric values and effective projected illuminated areas at least as large as that of Class B lamps. If a multiple compartment lamp or multiple lamps are used to meet this requirement, the effective projected illuminated area of each compartment or lamp shall be not less than that of a Class B lamp, and Class A photometric requirements shall be provided by one or a combination of the compartments or lamps.

S3.1.1.8 Passenger cars; and multipurpose passenger vehicles, trucks, trailers, and buses, of less than 80 inches overall width, and of less than 30 feet overall length, shall be equipped with side-marker lamps conforming to SAE Standard J592b, April 1964, except that the photometric minimum candlepower requirements specified therein may be met for inboard test points at a distance of 15 feet from the vehicle and on a vertical plane that is perpendicular to the longitudinal axis of the vehicle and located midway between the front and rear side-marker lamps.

S3.1.1.9 Boat trailers need not be equipped with front and rear clearance lamps located as specified in Table II, provided amber (to front) and red (to rear) clearance lamps are located on each side at or near the midpoint between front and rear of the trailer and indicate the extreme width of the trailer.

S3.1.1.10 Two or more license plate lamps and two or more backup lamps may be used to fulfill the requirements specified in Tables I and III for a single license plate lamp and a single backup lamp, respectively.

S3.1.1.11 Wedge base type bulb sockets conforming to SAE Recommended Practice J822, "Wedge Base Type Socket", April 1962, may be used in lieu of the bulb sockets specified by SAE Standard J567, "Bulb Sockets", August 1965.

S3.1.2 No additional lamp, reflective device, and associated equipment shall be installed if it impairs the effectiveness of the required equipment.

S3.1.3 *School buses.*

S3.1.3.1 School buses shall be equipped with a system of either:

(a) Four red signal lamps designed to conform to SAE Standard J887, "School Bus Red Signal Lamps", July 1964, and four amber signal lamps designed to conform to that standard, except for color and except the candlepower requirement shall be 2½ times that specified; or

(b) Four red signal lamps designed to conform to SAE Standard J887, "School Bus Red Signal Lamps", July 1964.

S3.1.3.2 The red and amber signal lamp system specified in S3.1.3.1(a) shall be installed in accordance with SAE Standard J887, July 1964, except that:

(a) An amber signal lamp shall be located near each red signal lamp, at the same level, but closer to the vertical centerline of the bus; and

(b) The system of red and amber signal lamps shall be wired so that:

(1) The amber lamps are energized manually; and

(2) The red signal lamps are automatically energized, and the amber signal lamps are automatically deenergized, when the bus entrance door is opened.

S3.1.3.3 The red signal lamp system specified in S3.1.3.1(b) shall be installed in accordance with SAE Standard J887, July 1964.

S3.2 *Location of lamps and reflectors.*

S3.2.1 Except as provided in S3.2.1.1 through S3.2.1.3, lamps, reflective devices and associated equipment required by S3.1 shall be installed in accordance with:

(a) Table II for multipurpose passenger vehicles, trucks, trailers, and buses, of 80 or more inches overall width; or

(b) Table IV for passenger cars; motorcycles; and multipurpose passenger vehicles, trucks, trailers, and buses of less than 80 inches overall width.

S3.2.1.1 On tractor trailer combination vehicles of 80 or more inches overall width, the requirement that intermediate side reflex reflectors and intermediate side-marker lamps be located at or near the midpoint between the forward and aft side reflex reflectors and forward and aft side-marker lamps, respectively, applies only to the trailer.

S3.2.1.2 On truck tractors, the red rear reflex reflectors may be mounted on the back of the cab.

S3.2.1.3 The visibility provision for a backup lamp may be fulfilled by two or more lamps functioning as a system.

S3.2.1.4 On trailers, the amber front side reflex reflectors and amber front side-marker lamps may be located as far forward as practicable exclusive of the trailer tongue.

S3.3 *Lamp combinations and equipment combinations.* Two or more lamps, reflective devices, and items of associated equipment may be combined if the requirements for each lamp, reflective device, and item of associated equipment are met, except that—

(a) No turn-signal lamp may be combined optically with any lamp (other than a stop lamp) that produces more than one-fifth the light intensity of the turn-signal lamp at test points of H–V, H–5L, H–5R, and 5U–V, nor more than one-third the intensity at any other test point on or above the horizontal.

(b) No turn-signal lamp may be combined optically with a stop lamp unless the stop lamp is extinguished when the turn-signal is flashing; and

(c) No clearance lamp may be combined optically with any taillamp or identification lamp on multipurpose passenger vehicles, trucks, trailers, and buses, of 80 or more inches overall width.

S3.4 *Special wiring requirements.*

S3.4.1 A means for switching between lower and upper headlamp beams shall be provided in accordance with SAE Recommended Practice J564a, "Headlamp Beam Switching", April 1964, or with SAE Recommended Practice J565a, "Semiautomatic Headlamp Beam Switching Devices", April 1964.

S3.4.2 A means for indicating to the driver when the upper beams of headlamps are on shall be provided in accordance with SAE Recommended Practice J564a, April 1964, except that the signal color need not be red.

S3.4.3 As a minimum the taillamps shall be illuminated when the headlamps are illuminated, except when the headlamps are being flashed.

S3.4.4 Except as provided in S3.4.4.1 through S3.4.4.3, stoplamps shall be actuated upon application of any service or emergency brakes.

S3.4.4.1 Stoplamps need not be actuated upon application of the parking brake. If the emergency brake system is used also as a parking brake, the stoplamp need not be actuated when the vehicle is parked.

S3.4.4.2 Stoplamps on a towing vehicle need not be actuated upon application of brakes to the towed vehicle only.

S3.4.4.3 Stoplamps on a towed vehicle need not be actuated if the towed vehicle becomes separated from the towing vehicle.

S3.4.5 The vehicular hazard warning signal operating unit shall operate independently of the ignition or equivalent switch, and when energized, cause all turn-signal lamps to flash simultaneously.

S3.4.6 On all vehicles required to be equipped with a backup lamp by this standard, the backup lamp shall be illuminated when the ignition or equivalent switch is energized and reverse gear is engaged.

S3.4.7 Except on vehicles using variable load flashers, a means for indicating to the driver that the turn-signal system is energized shall be provided in accordance with SAE Standard J588d, "Turn-Signal Lamps", June 1966.

S3.5 *Lighting display.* When energized, each lamp specified in Tables I and III shall, in normal operation, be steady-burning except turn-signal lamps and hazard warning signal lamps, which shall flash. However, normally steady-burning lamps may be capable of being individually flashed for signaling purposes.

86-044—68——6

TABLE I—EQUIPMENT

MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF 80 OR MORE INCHES OVERALL WIDTH

Item	Number and color in accordance with Society of Automotive Engineers Standard J578a, April 1965 required on—			In accordance with SAE standard or recommended practice
	Multipurpose passenger vehicles, trucks (other than truck tractors), and buses	Trailers	Truck tractors	
Headlamps	2 white, 7-inch, Type 2 headlamp units; or 2 white, 5¾-inch, Type 1 headlamp units and 2 white, 5¾-inch, Type 2 headlamp units.		Same as trucks and buses.	J580a, June 1966, and J579a, August 1965.
Taillamps	2 red	2 red	2 red	J585c, June 1966.
Stop lamps	2 red or amber	2 red or amber	2 red or amber	J586b, June 1966.
License plate lamp	1 white	1 white	1 white	J587b, April 1964.
Reflex reflectors	4 Class A red; 2 Class A amber.	4 Class A red; 2 Class A amber.	2 Class A red (on rear); 2 Class A amber.	J594c, February 1965.
Side-marker lamps	2 red; 2 amber	2 red; 2 amber	2 amber	J592b, April 1964.
Backup lamp	1 white		1 white	J593b, May 1966.
Turn-signal lamps	2 Class A red or amber; 2 Class A amber.	2 Class A red or amber.	2 Class A red or amber; 2 Class A amber.	J588d, June 1966.
Turn-signal operating unit.	1		1	J589, April 1964.
Turn-signal flasher	1		1	J590b, October 1965.
Vehicular hazard warning signal operating unit.	1		1	J910, January 1966.
Vehicular hazard warning signal flasher.	1		1	J945, February 1966.
Identification lamps.	3 amber and 3 red	3 red	3 amber	J592b, April 1964.
Clearance lamps	2 amber and 2 red	2 amber and 2 red	2 amber	J592b, April 1964.
Intermediate side-marker lamps.	2 amber	2 amber		J592b, April 1964.
Intermediate reflex reflectors.	2 Class A amber	2 Class A amber		J594c, February 1965.

TABLE II—LOCATION OF EQUIPMENT

MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF 80 OR MORE INCHES OVERALL WIDTH

Item	Location on—			Height above road surface measured from center of item on vehicle at curb weight
	Multipurpose passenger vehicles, trucks (other than truck tractors), and buses	Trailers	Truck tractors	
Headlamps	Type 1 headlamps at the same height, 1 on each side of the vertical centerline; Type 2 headlamps at the same height, 1 on each side of the vertical centerline, as far apart as practicable.		Same as trucks and buses.	Not less than 24 inches, nor more than 54 inches.
Taillamps	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.
Stop lamps	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.

See footnote at end of table.

TABLE II—LOCATION OF EQUIPMENT

MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF 80 OR MORE INCHES OVERALL WIDTH—con.

Item	Location on—			Height above road surface measured from center of item on vehicle at curb weight
	Multipurpose passenger vehicles, trucks (other than truck tractors), and buses	Trailers	Truck tractors	
License plate lamp	At rear license plate	At rear license plate	At rear license plate.	
Reflex reflectors	2 red—on rear, 1 on each side of the vertical centerline, as far apart as practicable and at the same level. 2 red—on sides, 1 on each side as far aft as practicable. 2 amber—on sides, 1 on each side as far forward as practicable.	2 red—on rear, 1 on each side of the vertical centerline, as far apart as practicable and at the same level. 2 red—on sides, 1 on each side as far aft as practicable. 2 amber—on sides, 1 on each side as far forward as practicable.	2 red—on rear, 1 on each side of the vertical centerline, as far apart as practicable and at the same level.[1] 2 amber—on sides, 1 on each side as far forward as practicable.	Not less than 15 inches nor more than 60 inches.
Side-marker lamps	On each side: 1 red lamp as far to the rear as practicable and 1 amber lamp as far forward as practicable.	On each side: 1 red lamp as far to the rear as practicable and 1 amber lamp as far forward as practicable.	On each side: 1 amber lamp as far forward as practicable.	Not less than 15 inches.
Backup lamp	On rear, so that the optical center of the lens surface is visible from any eye point elevation from 2 feet to 6 feet above the horizontal plane on which the vehicle is standing, and from any position in the area rearward of a vertical plane, perpendicular to the longitudinal axis of the vehicle 3 feet to the rear of the vehicle, and extending 3 feet beyond each side of the vehicle.	----------	On rear, so that the optical center of the lens surface is visible from any eye point elevation from 2 feet to 6 feet above the horizontal plane on which the vehicle is standing, and from any position in the area rearward of a vertical plane, perpendicular to the longitudinal axis of the vehicle 3 feet to the rear of the vehicle, and extending 3 feet beyond each side of the vehicle.	
Turn-signal lamps	At or near the front: 1 amber on each side of the vertical centerline, at the same level, and as far apart as practicable. On rear: 1 red or amber on each side of the vertical centerline, at tbe same level, and as far apart as practicable.	On rear: 1 red or amber on each side of the vertical centerline, at the same level, and as far apart as practicable. ----------	At or near the front: 1 amber on each side of the vertical centerline, at the same level, and as far apart as practicable. On rear: 1 red or amber on each side of the vertical centerline, at the same level, and as far apart as practicable.	Not less than 15 inches.
Identification lamps	On front and rear: 3 lamps, amber in front red in rear, grouped in a horizontal row, with lamp centers spaced not less than 6 inches, nor more than 12i nches, apart and mounted as close as practicable to the vertical centerline.	On rear: 3 red lamps grouped in a horizontal row with lamp centers spaced not less than 6 inches, nor more than 12 inches apart and mounted as close as practicable to the vertical centerline.	On front: 3 amber lamps grouped in a horizontal row with lamp centers spaced not less than 6 inches, nor more than 12 inches, apart and mounted as close as practicable to the vertical centerline.	On front only: No part of the lamps or mountings may extend below the top of the vehicle's windshield.

See footnote at end of table.

TABLE II—LOCATION OF EQUIPMENT

MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF 80 OR MORE INCHES OVERALL WIDTH—CON.

Item	Location on—			Height above road surface measured from center of item on vehicle at curb weight
	Multipurpose passenger vehicles, trucks (other than truck tractors), and buses	Trailers	Truck tractors	
Clearance lamps	On front and rear: 1 amber lamp in front, 1 red lamp in rear, as near as practicable to the upper left and right extreme edges of the vehicle. When the rear identification lamps are mounted at the extreme height of the vehicle, rear clearance lamps may be mounted at optional heights.	On front and rear: 1 amber lamp in front, 1 red lamp in rear, as near as practicable to the upper left and right extreme edges of the vehicle. When the rear identification lamps are mounted at the extreme height of the vehicle, rear clearance lamps may be mounted at optional heights.	On front: 1 amber lamp as near as practicable to the upper left and right extreme edges of the vehicle.	
Intermediate side-marker lamps.	On each side: 1 amber lamp located at or near the midpoint between the forward and aft side marker lamps.	On each side: 1 amber lamp located at or near the midpoint between the forward and aft side marker lamps.	----------	Not less than 15 inches.
Intermediate side reflex reflectors.	On each side: 1 amber located at or near the midpoint between the forward and aft side reflex reflectors.	On each side: 1 amber located at or near the midpoint between the forward and aft side reflex reflectors.	----------	Not less than 15 inches nor more than 60 inches.

[1] See S3.2.1.2.

TABLE III—EQUIPMENT

PASSENGER CARS; MOTORCYCLES; AND MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF LESS THAN 80 INCHES OVERALL WIDTH

Item	Number and color in accordance with Society of Automotive Engineers Standard J578a, April 1965 required on—			In accordance with SAE standard or recommended practice
	Passenger cars, multipurpose passenger vehicles, trucks, and buses	Trailers	Motorcycles	
Headlamps	2 white, 7-inch, Type 2 headlamp units; or 2 white, 5¾-inch, Type 1 headlamp units and 2 white, 5¾-inch, Type 2 headlamp units.	----------	----------	J580a, June 1966, and J579a, August 1965.
	----------	----------	1 white	J584, April 1964.
Taillamps	2 red	2 red	1 red	J585c, June 1966.
Stop lamps	2 red or amber	2 red or amber	1 red or amber	J586b, June 1966.
License plate lamp	1 white	1 white	1 white	J587b, April 1964.
Parking lamps	2 amber	----------	----------	J592b, April 1964.
Reflex Reflectors	4 Class A red; 2 Class A amber.[1]	4 Class A red; 2 Class A amber.[1]	3 Class B red; 2 Class B amber.	J594c, February 1965.
Side-marker lamps	2 red; 2 amber [2]	2 red; 2 amber [2]	----------	J592b, April 1964.

See footnotes at end of table.

TABLE III—EQUIPMENT—Continued

PASSENGER CARS; MOTORCYCLES; AND MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF LESS THAN 80 INCHES OVERALL WIDTH—continued

Item	Number and color in accordance with Society of Antomotive Engineers Standard J578a, April 1965 required on—			In accordance with SAE standard or recommended practice
	Passenger cars, multipurpose passenger vehicles, trucks, and buses	Trailers	Motorcycles	
Backup lamp	1 white			J593b, May 1966.
Turn-signal lamps	2 Class A red or amber; 2 Class A amber.[3]	2 Class A red or amber.		J588d, June 1966.
Turn-signal operating unit.	1			J589, April 1964.
Turn-signal flasher	1			J590b, October 1965.
Vehicular hazard warning signal operating unit.	1			J910, January 1966.
Vehicular hazard warning signal flasher.	1			J945, February 1966.

[1] See S3.1.1.5 and S3.1.1.6.
[2] See S3.1.1.6.
[3] See S3.1.1.7.

TABLE IV—EQUIPMENT LOCATION

PASSENGER CARS; MOTORCYCLES; AND MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF LESS THAN 80 INCHES OVERALL WIDTH

Item	Location on—		Height above road surface measured from center of item on vehicle at curb weight
	Passenger cars, multipurpose passenger vehicles, trucks, trailers, and buses	Motorcycles	
Col. 1	Col. 2	Col. 3	Col. 4
Headlamps	Type 1 headlamps at the same height, 1 on each side of the vertical centerline; Type 2 headlamps at the same height, 1 on each side of the vertical centerline, as far apart as practicable.	On front centerline, except that, if two lamps are used, they may be symmetrically disposed about the front centerline.	Not less than 24 inches, nor more than 54 inches.
Taillamps	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On rear centerline except that, if two lamps are used, they may be symmetrically disposed about the rear centerline.	Not less than 15 inches, nor more than 72 inches.
Stop lamps	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On rear centerline except that, if two lamps are used, they may be symmetrically disposed about the rear centerline.	Not less than 15 inches, nor more than 72 inches.
License plate lamp	At rear license plate	At rear license plate.	
Reflex reflectors	2 red—on rear, 1 on each side of the vertical centerline as far apart as practicable and at the same level.[1] 2 red—1 on each side as far aft as practicable.[2] 2 amber—1 on each side as far forward as practicable.[2]	1 red on rear centerline except that, if two reflectors are used on the rear, they may be symmetrically disposed about the centerline. 2 red—1 on each side, as far aft as practicable. 2 amber—1 on each side as far forward as practicable.	Not less than 15 inches nor more than 60 inches.

See footnotes at end of table.

TABLE IV—EQUIPMENT LOCATION—Continued

PASSENGER CARS; MOTORCYCLES; AND MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF LESS THAN 80 INCHES OVERALL WIDTH—continued

Item	Location on—		Height above road surface measured from center of item on vehicle at curb weight
	Passenger cars, multipurpose passenger vehicles, trucks, trailers, and buses	Motorcycles	
Col. 1	Col. 2	Col. 3	Col. 4
Backup lamp	On rear, so that the optical center of the lens surface is visible from any eye point elevation from 2 feet to 6 feet above the horizontal plane on which the vehicle is standing, and from any position in the area rearward of a vertical plane, perpendicular to the longitudinal axis of the vehicle 3 feet to the rear of the vehicle, and extending 3 feet beyond each side of the vehicle.	----------	
Turn-signal lamps [3]	At or near the front: 1 amber on each side of the vertical centerline, at the same level, and as far apart as practicable.[4] On rear: 1 red or amber on each side of the vertical centerline, at the same level, and as far apart as practicable.[4]	----------	Not less than 15 inches.
Side-marker lamps	On each side: 1 red lamp as far to the rear as practicable and 1 amber lamp as far forward as practicable.[2]	----------	Not less than 15 inches.

[1] See S3.1.1.5.
[2] See S3.1.1.6.
[3] Front turn signal lamps not required for trailers.
[4] See S3.1.1.7.

[32 F.R. 18035, Dec. 16, 1967, effective Jan. 1, 1969]

MOTOR VEHICLE SAFETY STANDARD NO. 109

NEW PNEUMATIC TIRES—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance, and high speed performance; defines tire load ratings; and specifies labeling requirements.

S2. *Application.* This standard applies to new pneumatic tires for use on passenger cars manufactured after 1948.

S3. *Definitions.*

"Bead" means that part of the tire made of steel wires, wrapped or reinforced by ply cords, that is shaped to fit the rim.

"Bead separation" means a breakdown of bond between components in the bead area.

"Bias ply tire" means a pneumatic tire in which the ply cords that extend to the beads are laid at alternate angles substantially less than 90° to the centerline of the tread.

"Carcass" means the tire structure, except tread and sidewall rubber.

"Chunking" means the breaking away of pieces of the tread.

"Cord" means the strands forming the plies in the tire.

"Cord separation" means cords parting away from adjacent rubber compounds.

"Groove" means the space between two adjacent tread ribs.

"Load rating" means the maximum load a tire is rated to carry for a given inflation pressure.

"Maximum permissible inflation pressure" means the maximum cold inflation pressure to which a tire may be inflated.

"Maximum load rating" means the load rating at the maximum permissible inflation pressure for that tire.

"Overall width" means the linear distance between the exteriors of the sidewalls of an inflated tire, including elevations due to labeling, decorations, or protective bands or ribs.

"Ply" means a layer of rubber-coated parallel cords.

"Ply separation" means a parting of

rubber compound between adjacent plies.

"Pneumatic tire" means a mechanical device made of rubber, chemicals, fabric and steel or other materials, which, when mounted on an automotive wheel, provides the traction and contains the gas or fluid that sustains the load.

"Radial ply tire" means a pneumatic tire in which the ply cords which extend to the beads are laid at substantially 90° to the centerline of the tread.

"Rim" means a metal support for a tire or a tire and tube assembly upon which the tire beads are seated.

"Section width" means the linear distance between the exteriors of the sidewalls of an inflated tire, excluding elevations due to labeling, decoration, or protective bands.

"Sidewall" means that portion of a tire between the tread and the bead.

"Size factor" means the sum of the section width and the outer diameter of a tire determined on the test rim.

"Test rim" means any rim of the applicable rim width specified in Table I for a particular tire size designation with the rim dimensions shown in the 1967 Tire and Rim Assocation Year Book, the 1967 Tire and Rim Association Supplementary Service Data Book, the Tyre and Wheel Engineering Data Book dated 1965/1966 of the Society of Motor Manufacturers and Traders Limited (SMMT), the Japan Automobile Tire Manufacturers Association, 1966 edition, the Japanese Industrial Standards (JIS–D4202) dated 1966, the European Tire and Rim Technical Organization practices (E.T.R.T.O.), the Deutsche Industrie Norm (DIN) 7818 dated June 1959, or Deutsche Industrie Norm (DIN) 7817 dated August 1962 or an approved equivalent rim.

"Tread" means that portion of a tire that comes into contact with the road.

"Tread rib" means a tread section running circumferentially around a tire.

"Tread separation" means pulling away of the tread from the tire carcass.

S4. *Requirements.*

S4.1 *Size and Construction.* Each tire shall be designed to fit each rim specified for its size designation in each reference cited in the definition of "test rim" in S.3.

S4.2 *Performance Requirements.*

S4.2.1 *General.* Each tire shall conform to each of the following:

(a) It shall meet the requirements specified in S4.2.2 for its tire size designation, type, and maximum permissible inflation pressure.

(b) Its maximum permissible inflation pressure shall be either 32, 36, or 40 p.s.i.

(c) Its load rating shall be that specified in Table I for its size designation, type, and each appropriate inflation pressure.

(d) If manufactured on or after August 1, 1968, it shall incorporate a tread wear indicator that will provide a visual indication that the tire has worn to a tread depth of 1/16 inch.

S4.2.2 *Test requirements.*

S4.2.2.1 *Test sample.* For each test sample use—

(a) One tire for physical dimensions, resistance to bead unseating, and strength, in sequence;

(b) Another tire for tire endurance; and

(c) A third tire for high speed performance.

S4.2.2.2 *Physical Dimensions.* Each tire, when measured in accordance with S5.1, shall conform to each of the following:

(a) Its actual section width and overall width shall not exceed by more than 7 percent the section width specified in Table I for its size designation and type; and

(b) Its size factor shall be at least as large as that specified in Table I for its size designation and type.

S4.2.2.3 *Tubeless tire resistance to bead unseating.* When tested in accordance with S5.2, the applied force required to unseat the tire bead at the point of contact shall not be less than:

(a) 1,500 pounds for tires with a designated section width of less than six (6) inches;

(b) 2,000 pounds for tires with a designated section width of six (6) inches or more but less than eight (8) inches;

(c) 2,500 pounds for tires with a designated section width of eight (8) inches or more, using the section width specified in Table I for the applicable tire size designation and type.

S4.2.2.4 *Tire strength.* Each tire shall meet the requirements for minimum breaking energy specified in Table II when tested in accordance with S5.3.

S4.2.2.5 *Tire endurance.* After completion of the laboratory test wheel endurance test specified in S5.4, no tire shall have tread, ply, cord, or bead separation; chunking; or broken cords.

S4.2.2.6 *High speed performance.* After completion of the laboratory high

speed performance test specified in S5.5, no tire shall have tread, ply, cord, or bead separation; chunking; or broken cords.

S4.3 *Labeling requirements.* Except as provided in S4.3.1, each tire shall be conspicuously labeled on both sidewalls with each of the following permanently molded into or onto the tire:

(a) Size designation.

(b) Maximum permissible inflation pressure.

(c) Maximum load rating.

(d) Identification of manufacturer by—

(1) Name; or

(2) Brand name and an approved code mark.

(e) Composition of the material used in the ply cord.

(f) Actual number of plies in the sidewall and the actual number of plies in the tread area, if different.

(g) The word "tubeless" or "tube type", as applicable.

(h) The word "radial", if a radial ply tire.

(i) An approved recital (or the symbol specified in Figure 1) that the tire conforms to applicable Federal Motor Vehicle Safety Standards.

S4.3.1 Until August 1, 1968, the labeling requirements of S4.3 may be met by affixing to each tire a label or tag that incorporates all specified information not molded into or onto the tire.

S5. *Test procedures.*

S5.1 *Physical Dimensions.* Determine tire physical dimensions under uniform ambient conditions as follows:

(a) Mount the tire on a test rim and inflate it to the applicable pressure specified in Table III.

(b) Condition it at ambient room temperature for at least 24 hours.

(c) Readjust pressure to that specified in (a).

(d) Caliper the section width and overall width at six points approximately equally spaced around the tire circumference.

(e) Record the average of these measurements as the section width and overall width, respectively.

(f) Determine tire outer diameter by measuring the maximum circumference of the tire and dividing this dimension by pi (3.14).

S5.2 *Tubeless tire bead unseating resistance.*

S5.2.1 *Preparation of tire-wheel assembly.*

S5.2.1.1 Wash the tire, dry it at the beads, and mount it without lubrication or adhesives on a clean, painted test rim.

S5.2.1.2 Inflate it to the applicable pressure specified in Table III at ambient room temperature.

S5.2.1.3 Mount the wheel and tire in the fixture shown in Figure 2, and force the standard block shown in Figure 3 against the tire sidewall as required by the geometry of the fixture.

S5.2.2 *Test procedure.*

S5.2.2.1 Apply a load through the block to the tire outer sidewall at the distance specified in Figure 2 for the applicable wheel size at a rate of 2 inches per minute, with the load arm substantially parallel to the tire and rim assembly at the time of engagement.

S5.2.2.2 Increase the load until the bead unseats or the applicable value specified in S4.2.2.3 is reached.

S5.2.2.3 Repeat the test at least four places equally spaced around the tire circumference.

S5.3 *Tire strength.*

S5.3.1 *Preparation of tire.*

S5.3.1.1 Mount the tire on a test rim and inflate it to the applicable pressure specified in Table III;

S5.3.1.2 Condition it at room temperature for at least 3 hours; and

S5.3.1.3 Readjust its pressure to that specified in S5.3.1.1.

S5.3.2 *Test procedure.*

S5.3.2.1 Force a ¾-inch diameter cylindrical steel plunger with a hemispherical end perpendicularly into the tread rib as near to the centerline as possible, avoiding penetration into the tread groove, at the rate of 2 inches per minute.

S5.3.2.2 Record the force and penetration at five test points equally spaced around the circumference of the tire. If the tire fails to break before the plunger is stopped by reaching the rim, record the force and penetration as the rim is reached and use these values in S5.3.2.3.

S5.3.2.3 Compute the breaking energy for each test point by means of the following formula:

$$W = \frac{F \times P}{2}$$

where

W = Energy, inch-pounds;
F = Force, pounds; and
P = Penetration, inches.

S5.3.2.4 Determine the breaking energy value for the tire by computing the average of the five values obtained in accordance with S5.3.2.3.

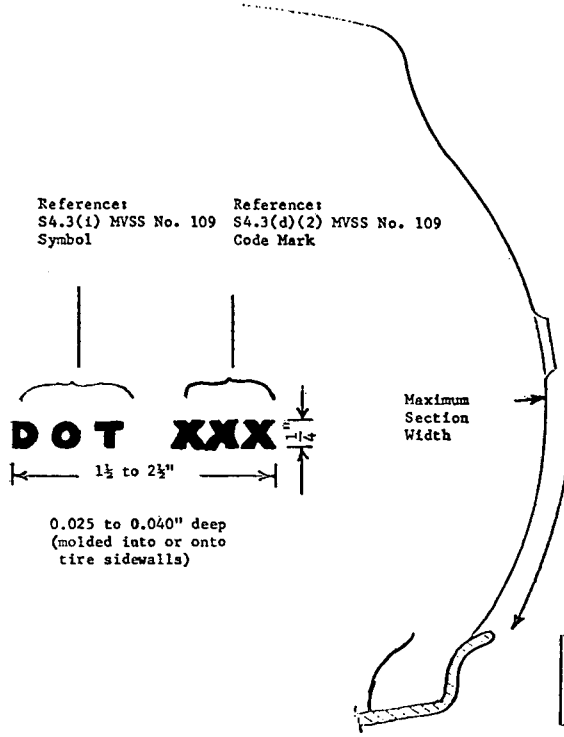
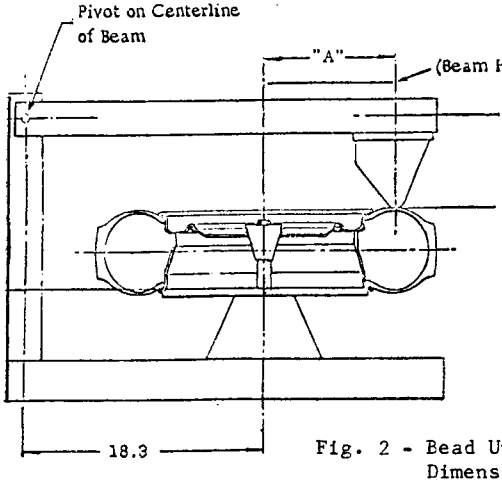


Figure 1 - MVSS No. 109

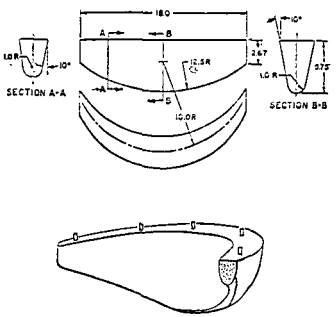
SPECIFICATIONS FOR APPROVED SYMBOL AND MANUFACTURERS' CODE MARK



Wheel Size	Dim "A"
17"	12.0
16"	11.5
15"	11.0
14"	10.5
13"	10.0
12"	9.5
11"	9.0
10"	8.5

Fig. 2 - Bead Unseating Test Fixture
Dimensions in inches

Figure 3. Diagram of Bead Unseating Block.



S5.4 *Tire endurance.*

S5.4.1 *Preparation of tire.*

S5.4.1.1 Mount a new tire on a test rim and inflate it to the applicable pressure specified in Table III.

S5.4.1.2 Condition the tire assembly to 100±5° F. for at least three hours.

S5.4.1.3 Readjust tire pressure to that specified in S5.4.1.1 immediately before testing.

S5.4.2 *Test procedure.*

S5.4.2.1 Mount the tire and wheel assembly on a test axle and press it against a flat-faced steel test wheel 67.23 inches in diameter and at least as wide as the section width of the tire to be tested or an approved equivalent test wheel, with the applicable test load specified in Table I for the tire's size designation, type, and maximum permissible inflation pressure.

S5.4.2.2 During the test, the air surrounding the test area shall be 100±5° F.

S5.4.2.3 Conduct the test at 50 miles per hour in accordance with the following schedule without interruption:

Maximum permissible inflation pressure (p.s.i.)	Load (from table I)—		
	For 4 hours	For 6 hours	For 24 hours
32	24 p.s.i. column.	28 p.s.i. column.	32 p.s.i. column.
36	28 p.s.i. column.	32 p.s.i. column.	36 p.s.i. column.
40	32 p.s.i. column.	36 p.s.i. column.	40 p.s.i. column.

S5.5 *High speed performance.*

S5.5.1 After preparing the tire in accordance with S5.4.1, mount the tire and wheel assembly in accordance with S5.4.2.1, and press it against the test wheel with the load specified in Table I for the tire's size designation and the applicable pressure specified in Column B of the following table:

A *Maximum permissible inflation pressure (p.s.i.)*	*B* *Load from Table I*
32	24 p.s.i. column.
36	28 p.s.i. column.
40	32 p.s.i. column.

S5.5.2 Break in the tire by running it for 2 hours at 50 m.p.h.

S5.5.3 Allow it to cool to 100±5° F. and readjust the inflation pressure to the applicable pressure specified in Table III.

S5.5.4 Without readjusting inflation pressure, test at 75 m.p.h. for 30 minutes, 80 m.p.h. for 30 minutes, and (except deep-tread, winter-type tires) 85 m.p.h. for 30 minutes.

TABLE I-A

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR CONVENTIONAL AND LOW SECTION HEIGHT BIAS PLY TIRES

Tire size designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section width [1] (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
6.00-13			770	820	860	900	930	970	1,010	1,040	1,080	1,110	1,140	4	29.37	6.00
6.50-13			890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	4½	30.75	6.60
7.00-13			980	1,030	1,080	1,130	1,180	1,230	1,270	1,310	1,360	1,400	1,440	5	31.88	7.10
6.00-14			840	900	930	980	1,020	1,060	1,100	1,130	1,170	1,210	1,240	4	30.64	6.10
6.50-14			930	990	1,030	1,080	1,130	1,170	1,210	1,250	1,300	1,330	1,370	4½	31.75	6.60
7.00-14			1,030	1,100	1,140	1,190	1,240	1,290	1,340	1,380	1,430	1,470	1,520	5	32.88	7.10
7.50-14			1,150	1,230	1,280	1,340	1,390	1,450	1,500	1,550	1,600	1,650	1,700	5½	34.19	7.65
8.00-14			1,240	1,320	1,380	1,440	1,500	1,560	1,620	1,670	1,730	1,780	1,830	6	35.17	8.10
8.50-14			1,330	1,420	1,480	1,550	1,610	1,670	1,740	1,790	1,850	1,910	1,960	6	35.91	8.35
9.00-14			1,430	1,510	1,580	1,660	1,730	1,790	1,860	1,920	1,990	2,050	2,100	6½	36.91	8.80
6.45-14			860	910	960	1,000	1,040	1,080	1,120	1,160	1,200	1,240	1,270	4½	30.92	6.60
6.95-14			950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,310	1,350	1,390	5	31.96	7.00
7.35-14			1,040	1,100	1,160	1,210	1,260	1,310	1,360	1,400	1,450	1,490	1,540	5	32.92	7.30
7.75-14			1,150	1,210	1,270	1,330	1,390	1,440	1,500	1,550	1,600	1,650	1,690	5½	34.09	7.75
8.25-14			1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,670	1,730	1,780	1,830	6	35.11	8.20
8.55-14			1,360	1,430	1,510	1,580	1,640	1,710	1,770	1,830	1,890	1,950	2,000	6	36.06	8.50
8.85-14			1,430	1,510	1,580	1,660	1,730	1,790	1,860	1,920	1,990	2,050	2,100	6½	36.82	8.95
9.50-14			1,540	1,640	1,700	1,780	1,850	1,930	2,000	2,060	2,130	2,200	2,260	6½	37.74	9.05
6.00-15			890	940	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	4	31.64	6.10
6.50-15			980	1,040	1,080	1,130	1,180	1,230	1,270	1,320	1,360	1,400	1,440	4½	32.75	6.60
6.70-15			1,110	1,190	1,230	1,290	1,340	1,400	1,450	1,500	1,550	1,590	1,640	4½	33.95	7.00
6.85-15			950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,390	5	32.48	6.90
7.10-15			1,190	1,270	1,320	1,380	1,440	1,500	1,550	1,600	1,660	1,710	1,760	5	34.89	7.40
7.35-15			1,070	1,130	1,180	1,240	1,290	1,340	1,390	1,440	1,480	1,530	1,570	5½	33.86	7.50
7.60-15			1,310	1,400	1,450	1,520	1,580	1,640	1,710	1,760	1,820	1,880	1,930	5½	36.05	7.90
7.75-15			1,150	1,210	1,270	1,330	1,380	1,440	1,490	1,540	1,590	1,640	1,690	5½	34.53	7.65
8.00-15			1,380	1,470	1,530	1,600	1,670	1,730	1,800	1,860	1,920	1,980	2,040	6	36.84	8.30
8.15-15			1,240	1,300	1,370	1,430	1,490	1,550	1,610	1,660	1,720	1,770	1,820	6	35.50	8.15
8.20-15			1,470	1,570	1,630	1,710	1,780	1,850	1,920	1,980	2,050	2,110	2,170	6	37.50	8.50
8.45-15			1,340	1,410	1,480	1,550	1,620	1,680	1,740	1,800	1,860	1,920	1,970	6	36.37	8.35
8.85-15			1,430	1,510	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	37.29	8.80
8.90-15			1,700	1,810	1,880	1,970	2,050	2,130	2,210	2,290	2,360	2,430	2,500	6½	39.54	9.30
9.00-15			1,460	1,540	1,620	1,690	1,760	1,830	1,900	1,970	2,030	2,090	2,150	6	37.45	8.50
9.15-15			1,510	1,600	1,680	1,750	1,830	1,900	1,970	2,030	2,100	2,160	2,230	6½	37.92	9.05
6.00-16			1,075	1,135	1,195	1,250	1,300	1,350	1,400	1,450	1,500			4	34.17	6.25
6.50-16	1,090	1,150	1,215	1,280	1,345	1,405	1,465	1,525	1,580	1,635	1,690	1,740	1,790	4½	35.59	6.80
6.70-16		1,185	1,240	1,300	1,355	1,410	1,465	1,525	1,580	1,635	1,690	1,740	1,795	4½	35.60	7.40
7.60-16			1,365	1,440	1,515	1,585	1,650	1,715	1,780	1,840	1,900			5	37.02	7.35
7.50-16			1,565	1,650	1,735	1,810	1,890	1,960	2,035	2,105	2,175			6½	39.02	8.40
6.50-17		1,215	1,275	1,330	1,390	1,450	1,500	1,560	1,620	1,680	1,740	1,795	1,850	5	37.00	7.60

[1] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I–B

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS AND SECTION WIDTHS FOR "70 SERIES" BIAS PLY TIRES

Tire size designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section width [1] (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
D70-14			1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	32.87	7.85
E70-14			1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	5½	33.45	8.05
F70-14			1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	5½	34.18	8.30
G70-14			1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.14	8.75
H70-14			1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	6	36.19	9.10
J70-14			1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	36.91	9.50
E70-15			1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	6	34.17	8.10
F70-15			1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	6	34.91	8.35
G70-15			1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.68	8.60
H70-15			1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	6	36.68	8.95
J70-15			1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	37.34	9.35
K70-15			1,460	1,540	1,620	1,690	1,770	1,830	1,900	1,970	2,030	2,090	2,150	6½	37.62	9.40
L70-15			1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	6½	38.09	9.60
D70-15			1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	33.34	7.75
L70-14			1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	6½	37.59	9.80

[1] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I–C

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS, FOR BIAS PLY TIRES

Tire size designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section width [1] (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
"SUPER BALLOON" SIZES																
5.20-10	350	395	440	485	530	555	575	605	625	650	670	695	715	3½	24.84	5.20
5.90-10	385	430	475	515	550	580	605	630	650	675	700	-------	-------	4	24.00	5.80
5.20-12	395	445	495	545	595	625	655	685	710	735	760	785	810	3½	26.79	5.20
5.60-12	460	520	575	620	670	715	760	795	825	855	885	915	940	4	27.83	5.71
5.90-12	460	505	550	595	640	665	700	730	755	785	810	-------	-------	4	26.00	5.90
6.20-12	505	555	605	655	705	735	775	805	835	865	895	-------	-------	4½	27.00	6.30
5.20-13	430	485	540	590	640	670	710	740	765	795	820	850	875	3½	27.72	5.20
5.60-13	495	560	620	675	725	770	810	850	880	910	945	975	1005	4	28.92	5.71

5.90–13	555	625	695	755	815	860	895	935	970	1,005	1,040	1,075	1,105	4	29.74			5.91
6.20–13	520	580	640	700	750	780	820	850	880	910	945	1,015	1,210	4½	28.00			6.30
6.40–13	630	705	785	845	915	945	985	1,025	1,060	1,100	1,140	1,175	1,210	4½	31.26			6.42
6.70–13	690	775	860	935	1,000	1,045	1,090	1,135	1,175	1,220	1,260	1,305	1,340	4½	32.14			6.69
6.90–13	695	795	845	915	955	1,005	1,045	1,085	1,120	1,160	1,160			5	30.00			7.20
5.20–14	475	595	695	735	785	825	855	885	915	945	990	1,020	1,050	3½	28.89			5.20
5.60–14	530	595	660	715	770	815	855	890	920	955	990	1,020	1,050	4	29.94			5.71
5.90–14	585	660	730	785	850	880	925	970	1,005	1,040	1,080	1,115	1,145	4	30.76			5.91
6.40–14	660	745	825	890	960	1,000	1,060	1,090	1,130	1,170	1,210	1,250	1,290	4½	32.19			6.42
6.45H14			860	910	960	1,000	1,040	1,080	1,120					4½	30.92			
5.20–15	505	570	630	685	740	780	830	870	900	935	965	1,000	1,030	3½	29.75			5.20
5.60–15	555	625	695	755	815	860	895	935	970	1,005	1,040	1,075	1,105	4	30.87			5.71
5.90–15	615	695	770	825	890	935	980	1,015	1,050	1,090	1,130	1,165	1,200	4	31.77			5.91
"LOW SECTION" SIZES																		
5.00–12	370	420	465	505	540	565	580	605	625	650	670	695	715	3½	25.62			5.04
5.50–12	415	470	520	560	605	635	665	695	720	745	770	800	820	4	26.93			5.59
6.00–12	485	545	605	655	705	735	785	815	845	875	905	935	965	4½	28.33			6.14
5.00–13	410	460	510	550	585	610	635	660	685	710	735	755	780	3½	26.64			5.04
5.50–13	445	495	550	595	640	670	710	740	765	795	820	850	875	4	27.95			5.59
7.25–13	730	825	915	990	1,070	1,110	1,160	1,200	1,245	1,290	1,335	1,380	1,420	5	32.51			7.24
7.50–13	775	875	970	1,040	1,120	1,180	1,225	1,270	1,315	1,365	1,410	1,460	1,500	5½	33.22			7.48
5.50–15L	505	570	630	675	725	760	800	840	870	900	935	965	995	4	29.97			5.59
6.00–15L	595	665	740	800	860	890	930	970	1,005	1,040	1,080	1,115	1,145	4½	31.29			6.14
6.50–15L	675	755	840	900	970	1,010	1,060	1,105	1,145	1,185	1,230	1,270	1,305	4½	32.68			6.54
7.00–15L	760	855	960	1,025	1,100	1,145	1,190	1,235	1,280	1,325	1,375	1,420	1,460	5	33.85			7.01
"SUPER LOW SECTION" SIZES																		
145–10/5.95–10	380	430	475	515	550	580	605	630	650	675	700	725	745	4	24.76			5.79
125–12/5.35–12	335	380	420	450	485	510	535	560	570	590	610	630	650	3½	24.68			5.00
135–12/5.65–12	370	420	465	505	540	570	590	620	640	665	690	710	730	4	25.53			5.39
145–12/5.95–12	440	495	550	595	640	665	700	730	755	785	810	840	865	4	26.69			5.79
155–12/6.15–12	485	545	605	655	705	735	775	805	835	865	895	925	950	4½	27.36			6.18
135–13/5.65–13	415	470	520	555	595	625	655	685	710	735	760	785	810	4	26.53			5.39
145–13/5.95–13	470	525	585	620	670	705	745	770	800	825	855	885	910	4	27.61			5.79
155–13/6.15–13	515	575	640	700	750	780	820	850	880	910	945	975	1,005	4½	28.44			6.18
165–13/6.45–13	575	645	715	770	825	865	905	935	970	1,005	1,040	1,075	1,105	4½	29.52			6.57
175–13/6.95–13	635	715	795	845	915	955	1,005	1,045	1,085	1,120	1,100	1,200	1,235	5	30.34			7.01
185–13/7.35–13	695	785	870	945	1,010	1,060	1,115	1,160	1,205	1,245	1,290	1,335	1,370	5½	31.41			7.40
135–14/5.65–14	440	495	550	595	640	665	700	730	755	785	810	840	865	4	27.64			5.39
145–14/5.95–14	495	560	620	665	715	750	785	815	845	875	905	935	965	4	28.84			5.79
155–14/6.15–14	540	610	675	730	780	825	860	895	925	960	995	1,030	1,060	4½	29.45			6.18
125–15/5.35–15	395	445	495	535	570	600	625	650	675	700	720	745	770	3½	27.69			5.00
135–15/5.65–14	460	520	575	610	660	690	720	750	775	805	835	860	885	4	28.53			5.39
145–15/5.95–15	520	585	650	710	760	790	830	860	890	925	955	985	1,015	4	29.54			5.79
155–15/6.35–15	585	660	730	780	835	875	915	950	985	1,020	1,055	1,090	1,125	4½	30.45			6.18
175–15/7.15–15	705	795	880	955	1,020	1,070	1,125	1,170	1,215	1,255	1,300	1,345	1,385	5	32.42			7.01
235–15	1,150	1,295	1,435	1,545	1,660	1,735	1,825	1,895	1,965	2,035	2,110	2,180	2,245	6½	38.26			9.37

[1] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-D

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS AND SECTION WIDTHS FOR DASH (-) RADIAL TIRES

Tire size designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section width [1] (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
175-13	------	------	810	860	920	980	1,040	1,100	1,150	1,200	1,240	1,300	1,350	4½	30.30	6.40
185-13	------	------	870	940	1,010	1,080	1,140	1,210	1,270	1,330	1,390	1,450	1,510	5	31.42	7.25
195-13	------	------	970	1,040	1,110	1,180	1,250	1,320	1,400	1,450	1,520	1,580	1,640	5½	32.38	7.70
175-14	------	------	830	900	960	1,030	1,100	1,160	1,230	1,280	1,350	1,400	1,470	5	31.63	7.00
185-14	------	------	920	1,000	1,070	1,140	1,220	1,290	1,360	1,420	1,500	1,560	1,640	5	32.59	7.30
195-14	------	------	1,020	1,100	1,180	1,270	1,340	1,420	1,500	1,570	1,650	1,720	1,800	5½	33.69	7.80
205-14	------	------	1,100	1,180	1,270	1,380	1,450	1,540	1,620	1,700	1,770	1,860	1,940	6	34.82	8.80
215-14	------	------	1,200	1,300	1,390	1,510	1,580	1,670	1,770	1,850	1,920	2,010	2,100	6	35.79	8.60
225-14	------	------	1,320	1,420	1,510	1,610	1,710	1,800	1,900	1,970	2,050	2,150	2,230	6½	36.44	8.95
185-15	------	------	1,000	1,070	1,140	1,210	1,280	1,350	1,420	1,480	1,540	1,600	1,660	5½	33.58	7.45
195-15	------	------	1,080	1,160	1,240	1,330	1,400	1,470	1,550	1,620	1,680	1,760	1,820	5½	34.22	7.65
205-15	------	------	1,190	1,280	1,370	1,450	1,530	1,620	1,700	1,760	1,840	1,920	2,000	6	35.20	8.10
215-15	------	------	1,280	1,380	1,480	1,570	1,660	1,760	1,860	1,940	2,020	2,100	2,200	6	36.00	8.35
225-15	------	------	1,370	1,470	1,580	1,670	1,780	1,880	1,980	2,060	2,150	2,240	2,340	6½	36.94	8.80
235-15	------	------	1,430	1,540	1,640	1,750	1,850	1,960	2,060	2,160	2,250	2,350	2,450	6½	37.75	9.05
145-10	495	525	545	565	585	605	625	640	675	670	685	700	710	4	24.76	5.79
125-12	405	430	445	465	480	495	505	525	535	550	560	575	580	3½	24.68	4.00
135-12	480	510	530	550	565	585	600	620	635	650	665	675	685	4	25.53	5.39
145-12	570	605	625	650	675	695	715	740	760	775	790	805	815	4	26.69	5.79
155-12	630	670	695	720	745	770	795	820	840	860	875	890	905	4½	27.36	6.18
135-13	515	545	565	590	610	630	650	670	690	705	715	730	740	4	26.53	5.39
145-13	605	640	665	695	720	740	765	790	815	830	845	855	870	4	27.61	5.79
155-13	670	710	735	765	790	815	840	870	895	910	925	940	955	4½	28.44	6.18
135-14	555	585	610	635	655	675	695	720	740	750	765	780	790	4	27.54	5.39
145-14	645	680	710	735	760	785	810	840	865	885	905	920	935	4	28.54	5.79
125-15	495	525	545	565	585	605	625	640	655	670	685	700	710	3½	27.69	5.00
135-15	585	620	645	670	695	715	735	755	775	795	810	825	840	4	28.53	5.39
145-15	680	720	750	780	805	830	855	875	895	920	940	960	975	4	29.54	5.79
155-15	740	785	815	850	880	905	930	955	980	1,005	1,025	1,045	1,060	4½	30.45	6.18
180-15	925	980	1,020	1,060	1,095	1,130	1,170	1,190	1,230	1,260	1,280	1,305	1,325	4½	32.04	6.62

[1] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-E

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR TYPE G-77 BIAS PLY TIRES

Tire size designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section widths [1] (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
G77-14	.....	.....	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,770	1,780	1,830	6	35.04	8.45

[1] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-F

TIRE LOAD RATINGS, RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR DASH (-) RADIAL TIRES

Tire size designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section width [1] (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
5.20-10	435	460	485	510	535	560	585	615	635	660	685	710	735	3½	28.84	5.20
5.00-12	480	495	515	535	555	575	595	615	635	650	670	690	710	3½	25.62	5.04
5.20-12	515	540	565	590	615	640	665	695	715	740	765	790	815	3½	26.79	5.20
5.50-12	520	545	570	595	620	650	670	705	725	750	775	800	825	4	26.93	5.59
5.60-12	600	630	655	685	715	740	770	800	825	850	875	905	930	4	27.83	5.71
5.00-13	535	555	575	590	615	630	650	670	690	705	725	745	765	3½	26.64	5.04
5.20-13	570	595	620	645	670	695	720	750	770	795	820	845	870	3½	27.72	5.20
5.50-13	575	600	625	650	675	695	725	750	775	795	825	850	875	4	27.95	5.59
5.60-13	655	685	710	740	765	795	825	855	880	905	935	960	990	4	28.92	5.71
6.00-13	675	705	735	760	790	815	845	875	900	925	950	975	1,005	4	29.37	6.00
5.90-13	705	780	805	830	860	885	915	940	965	990	1,015	1,045	1,070	4	29.74	5.90
6.40-13	810	840	870	905	940	970	1,005	1,040	1,070	1,100	1,135	1,165	1,200	4½	31.26	6.42
6.50-13	800	830	860	890	925	960	995	1,030	1,060	1,090	1,120	1,150	1,180	4½	30.75	6.60
7.00-13	870	910	950	985	1,025	1,060	1,100	1,145	1,175	1,215	1,255	1,295	1,335	5	31.38	7.10
7.25-13	940	980	1,020	1,060	1,100	1,135	1,175	1,215	1,255	1,290	1,330	1,370	1,410	5	32.51	7.24
5.20-14	605	640	670	700	730	760	795	830	855	885	915	950	980	3½	28.89	5.20
5.90-14	750	785	815	845	875	905	935	970	995	1,025	1,055	1,085	1,115	4	30.76	5.91
7.00-14	925	960	1,000	1,040	1,075	1,115	1,155	1,195	1,235	1,270	1,320	1,350	1,380	5	32.88	7.10
7.50-14	1,065	1,100	1,140	1,180	1,220	1,260	1,300	1,340	1,380	1,415	1,460	1,500	1,540	5½	34.19	7.65
5.60-15	705	780	805	830	860	885	915	940	965	990	1,015	1,045	1,070	4	20.87	5.71
6.40-15	885	925	965	1,005	1,040	1,080	1,120	1,160	1,200	1,235	1,275	1,310	1,350	4½	33.26	6.42
6.70-15	975	1,015	1,055	1,095	1,130	1,170	1,215	1,255	1,290	1,325	1,365	1,405	1,445	4½	33.95	6.70
7.60-15	1,160	1,200	1,245	1,285	1,325	1,370	1,415	1,465	1,500	1,535	1,575	1,610	1,655	5½	36.00	7.90
6.70-13	690	775	860	935	1,000	1,045	1,090	1,135	1,175	1,220	1,260	1,305	1,340	4½	32.14	6.60

[1] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-G

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS AND SECTION WIDTHS FOR "70 SERIES" TYPE "R" RADIAL TIRES

Tire size designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section width [1] (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
DR70-14	.....	.....	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	32.78	7.90
ER70-14	.....	.....	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	5½	33.42	8.10
FR70-14	.....	.....	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	6	34.34	8.55
GR70-14	.....	.....	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.12	8.85
HR70-14	.....	.....	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	6½	36.31	9.40
JR70-14	.....	.....	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	36.86	9.55
LR70-14	.....	.....	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	6½	37.59	9.80
DR70-15	.....	.....	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	33.34	7.75
ER70-15	.....	.....	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	5½	33.91	7.95
FR70-15	.....	.....	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	6	34.87	8.40
GR70-15	.....	.....	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.65	8.65
HR70-15	.....	.....	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	6½	36.83	9.20
JR70-15	.....	.....	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	37.31	9.40
KR70-15	.....	.....	1,460	1,540	1,620	1,690	1,770	1,830	1,900	1,970	2,030	2,090	2,150	6½	37.62	9.50
LR70-15	.....	.....	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	6½	38.06	9.65

[1] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-H

TIRE LOAD RATINGS, TEST RIMS, MIMIMUM SIZE FACTORS, AND SECTION WIDTHS FOR TYPE "R" RADIAL TIRES

Tire size designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section width [1] (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
165R13	------	------	770	820	860	900	930	970	1,010	1,040	1,080	1,110	1,140	4½	29.18	6.40
175R13	------	------	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	4½	30.30	6.75
185R13	------	------	980	1,030	1,080	1,130	1,180	1,230	1,270	1,310	1,360	1,400	1,440	5	31.42	7.25
195R13	------	------	1,060	1,110	1,170	1,220	1,280	1,320	1,370	1,420	1,470	1,510	1,550	5½	32.38	7.70
155R14	------	------	780	820	860	900	940	970	1,010	1,040	1,080	1,110	1,140	4	29.51	6.05
165R14	------	------	860	910	960	1,000	1,040	1,080	1,120	1,160	1,200	1,240	1,270	4½	30.65	6.55
175R14	------	------	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,310	1,350	1,390	5	31.63	7.00
185R14	------	------	1,040	1,100	1,160	1,210	1,260	1,310	1,360	1,400	1,450	1,490	1,540	5	32.59	7.30
195R14	------	------	1,150	1,210	1,270	1,330	1,390	1,440	1,500	1,550	1,600	1,650	1,690	5½	33.69	7.80
205R14	------	------	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,670	1,730	1,780	1,830	6	34.82	8.80
215R14	------	------	1,360	1,430	1,510	1,580	1,640	1,710	1,770	1,830	1,890	1,950	2,000	6	35.79	8.60
225R14	------	------	1,430	1,510	1,580	1,660	1,730	1,790	1,860	1,920	1,990	2,050	2,100	6½	36.44	8.95
165R15	------	------	870	910	960	1,000	1,050	1,090	1,130	1,170	1,200	1,240	1,270	4½	31.18	6.40
175R15	------	------	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,390	5	32.30	6.90
185R15	------	------	1,070	1,130	1,180	1,240	1,290	1,340	1,390	1,440	1,480	1,530	1,570	5½	33.58	7.45
195R15	------	------	1,150	1,210	1,270	1,330	1,380	1,440	1,490	1,540	1,590	1,640	1,690	5½	34.22	7.65
205R15	------	------	1,240	1,300	1,370	1,430	1,490	1,550	1,610	1,660	1,720	1,770	1,820	6	35.20	8.10
215R15	------	------	1,340	1,410	1,480	1,550	1,620	1,680	1,740	1,800	1,860	1,920	1,970	6	36.00	8.35
225R15	------	------	1,430	1,510	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	36.94	8.80
235R15	------	------	1,510	1,600	1,680	1,750	1,830	1,900	1,970	2,030	2,100	2,160	2,230	6½	37.75	9.05

[1] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE II—MINIMUM BREAKING ENERGY VALUES (INCH-POUNDS)

TABLE II-A—FOR BIAS PLY TIRES WITH SIZE DESIGNATION OF 6.00 (OR 155 MILLIMETERS) AND ABOVE AND 70 SERIES TIRES

Cord material	Maximum permissible inflation pressure		
	32 p.s.i.	36 p.s.i.	40 p.s.i.
Rayon	1,650 in.-lbs.	2,475 in.-lbs.	3,300 in.-lbs.
Nylon or polyester.	2,600 in.-lbs.	3,900 in.-lbs.	5,200 in.-lbs.

TABLE II-B—FOR BIAS PLY TIRES WITH SIZE DESIGNATION BELOW 6.00 INCHES (OR 155 MILLIMETERS)

Cord material	Maximum permissible inflation pressure		
	32 p.s.i.	36 p.s.i.	40 p.s.i.
Rayon	1,000 in.-lbs.	1,875 in.-lbs.	2,500 in.-lbs.
Nylon or polyester.	1,950 in.-lbs.	2,925 in.-lbs.	3,900 in.-lbs.

TABLE II-C—FOR RADIAL PLY TIRES

Size designation	Maximum permissible inflation pressure		
	32 p.s.i.	36 p.s.i.	40 p.s.i.
Below 160 millimeters.	1,950 in.-lbs.	2,925 in.-lbs.	3,900 in.-lbs.
160 millimeters or above.	2,600 in.-lbs.	3,900 in.-lbs.	5,200 in.-lbs.

TABLE III

TEST INFLATION PRESSURES

Maximum permissible inflation pressure (in p.s.i.)	32	36	40
Pressure (in p.s.i.) to be used in tests for physical dimensions, bead unseating, tire strength, and tire endurance	24	28	32
Pressure (in p.s.i.) to be used in test or high speed performance	30	34	38

[32 F.R. 15792, Nov. 16, 1967, as amended at 32 F.R. 17938, Dec. 15, 1967]

MOTOR VEHICLE SAFETY STANDARD No. 110

TIRE SELECTION AND RIMS—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies requirements for tire selection to prevent tire overloading.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.*

"Accessory weight" means the combined weight (in excess of those standard items which may be replaced) of automatic transmission, power steering, power brakes, power windows, power seats, radio, and heater, to the extent that these items are available as factory-installed equipment (whether installed or not).

"Curb weight" means the weight of a motor vehicle with standard equipment including the maximum capacity of fuel, oil, and coolant, and, if so equipped, air conditioning and additional weight optional engine.

"Maximum loaded vehicle weight" means the sum of—

(a) Curb weight;

(b) Accessory weight;

(c) Vehicle capacity weight; and

(d) Production options weight.

"Normal occupant weight" means 150 pounds times the number of occupants specified in the second column of Table I.

"Occupant distribution" means distribution of occupants in a vehicle as specified in the third column of Table I.

"Production options weight" means the combined weight of those installed regular production options weighing over 5 pounds in excess of those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levelers, roof rack, heavy duty battery, and special trim.

"Vehicle capacity weight" means the rated cargo and luggage load plus 150 pounds times the vehicles designated seating capacity.

TABLE I

OCCUPANT LOADING AND DISTRIBUTION FOR VEHICLE NORMAL LOAD FOR VARIOUS DESIGNATED SEATING CAPACITIES

Designated seating capacity, number of occupants	Vehicle normal load, number of occupants	Occupant distribution in a normally loaded vehicle
2 through 4	2	2 in front.
5 through 10	3	2 in front, 1 in second seat.

"Vehicle maximum load on the tire" means that load on an individual tire that is determined by distributing to each axle its share of the maximum loaded vehicle weight and dividing by two.

"Vehicle normal load on the tire" means that load on an individual tire that is determined by distributing to each axle its share of the curb weight, accessory weight, and normal occupant weight

(distributed in accordance with Table I) and dividing by two.

S4. *Requirements.*

S4.1 *General.* Passenger Cars shall be equipped with tires that meet the requirements of Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires—Passenger Cars."

S4.2 *Tire load limits.*

S4.2.1 The vehicle maximum load on the tire shall not be greater than the applicable maximum load rating specified in Table I of Motor Vehicle Safety Standard No. 109 for the tire's size designation and type.

S4.2.2 The vehicle normal load on the tire shall not be greater than the test load used in the high speed performance test specified in S5.5 of Motor Vehicle Safety Standard No. 109 for that tire.

S4.3 *Placard.* A placard, permanently affixed to the glove compartment door or an equally accessible location, shall display the—

(a) Vehicle capacity weight;

(b) Designated seating capacity (expressed in terms of total number of occupants and in terms of occupants for each seat location);

(c) Vehicle manufacturer's recommended cold tire inflation pressure for maximum loaded vehicle weight and, subject to the limitations of S4.3.1, for any other manufacturer-specified vehicle loading condition; and

(d) Vehicle manufacturer's recommended tire size designation.

S4.3.1 No inflation pressure other than the maximum permissible inflation pressure may be specified unless—

(a) It is less than the maximum permissible inflation pressure;

(b) The vehicle loading condition for that pressure is specified; and

(c) The tire load rating from Table I of Motor Vehicle Safety Standard No. 109 for the tire at that pressure is not less than the vehicle load on the tire for that vehicle loading condition.

S4.4 *Rims.*

S4.4.1 *Requirements.* Each rim shall:

(a) Be constructed to the dimensions of a rim specified for the applicable tire's size designation in a reference cited in the definition of test rim in S3. of Motor Vehicle Safety Standard No. 109.

(b) In the event of rapid loss of inflation pressure with the vehicle traveling in a straight line at a speed of 60 miles per hour, retain the deflated tire until the vehicle can be stopped with a controlled braking application.

[32 F.R. 15798, Nov. 16, 1967]

Motor Vehicle Safety Standard No. 111

Rearview Mirrors—Passenger Cars and Mulitpurpose Passenger Vehicles

S1. *Purpose and scope.* This standard specifies requirements for rearview mirrors to provide the driver with a clear and reasonably unobstructed view to the rear.

S2. *Application.* This standard applies to passenger cars and multipurpose passenger vehicles.

S3. *Requirements.*

S3.1 *Inside rearview mirrors.*

S3.1.1 *Field of view.* A mirror shall be installed that provides the driver a view to the rear, of substantially unit magnification, with an included horizontal angle of at least 20 degrees and sufficient vertical angle to provide a view of a level road surface extending to the horizon beginning at a point not greater than 200 feet to the rear of the vehicle when the vehicle is occupied by the driver and four passengers or the designed occupant capacity, if less, based on 150 pound average occupant weight. The line of sight may be partially obscured by seated occupants or by head restraints.

S3.1.2 *Mounting.*

S3.1.2.1 The mirror mounting shall provide a stable support for the mirror, and shall provide for mirror adjustment by tilting in both horizontal and vertical directions.

S3.1.2.2 If the mirror is in the head impact area, the mounting shall break away without leaving sharp edges or deflect or collapse when the mirror is subjected to a force of 90 pounds in a forward or sideward direction in any plane 45° above or below the horizontal.

S3.2 *Outside mirrors.*

S3.2.1 *Driver's side.*

S3.2.1.1 *Field of view.* An outside mirror shall be installed that provides the driver a view, of substantially unit magnification, of a level road surface extending to the horizon from a line perpendicular to a plane tangent to the driver's side of the vehicle at the widest point and parallel to the longitudinal axis of the vehicle extending 8 feet out from the tangent plane 35 feet behind the driver's eyes, with the seat in the rearmost position. The line of sight

may be partially obscured by rear body or fender contours.

S3.2.1.2 *Mounting.* The mounting shall provide a stable support for the mirror and neither the mirror nor the mounting shall protrude further than the widest part of the vehicle body, except to the extent necessary to produce a field of view meeting or exceeding the requirements of S3.2.1.1. The mirror shall not be obscured by the unwiped portion of the windshield, and shall be adjustable from the driver's seated position. The mirror and mounting shall be free of sharp points or edges that could contribute to pedestrian injury.

S3.2.2 *Passenger's side.* If the inside mirror required by S3.1 does not meet the field of view requirements of S3.1.1, an outside mirror of substantially unit magnification shall be installed on the passenger's side.

S3.2.2.1 *Mounting.* The mounting shall provide a stable support for the mirror, and the mirror and mounting shall be free of sharp points or edges that could contribute to pedestrian injury.

S3.3 *Mirror construction.* The reflectance value of the reflective film employed shall be at least 35 percent. If a mirror is of the selective position prismatic type, the reflectance value in the night driving position shall be at least 4 percent.

S.4. *Demonstration procedures.* Reflectance shall be determined in accordance with Society of Automotive Engineers Recommended Practice J964, "Test Procedure for Determining Reflectivity of Rearview Mirrors," June 1966.

[32 F.R. 2408, Feb. 3, 1967, as amended at 32 F.R. 5498, Apr. 4, 1967]

Motor Vehicle Safety Standard No. 201

Occupant Protection in Interior Impact—Passenger Cars

S1. *Purpose and scope.* This standard specifies initial requirements to afford impact protection for occupants.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements*—S3.1 *Instrument Panels.* Except as provided in S3.1.1, when that area of the instrument panel that is within the head impact area is impacted in accordance with S3.1.2 by a 15-pound, 6.5-inch diameter head form at a relative velocity of 15 miles per hour, the deceleration of the head form shall not exceed 80g continuously for more than 3 milliseconds.

S3.1.1 The requirements of S3.1 do not apply to—

(a) Console assemblies;

(b) Areas less than 5 inches inboard from the juncture of the instrument panel attachment to the body side inner structure;

(c) Areas closer to the windshield juncture than those statically contactable by the head form with the windshield in place;

(d) Areas outboard of any point of tangency on the instrument panel of a 6.5-inch diameter head form tangent to and inboard of a vertical longitudinal plane tangent to the inboard edge of the steering wheel; or

(e) Areas below any point at which a vertical line is tangent to the rearmost surface of the panel.

S3.1.2 *Demonstration procedures.* Tests shall be performed as described in Society of Automotive Engineers Recommended Practice J921, "Instrument Panel Laboratory Impact Test Procedure," June 1965, using the specified instrumentation or instrumentation that meets the performance requirements specified in Society of Automotive Engineers Recommended Practice J977, "Instrumentation for Laboratory Impact Tests," November 1963, except that—

(a) The origin of the line tangent to the instrument panel surface shall be a point on a transverse horizontal line through a point 5 inches horizontally forward of the seating reference point of the front outboard passenger designated seating position, displaced vertically an amount equal to the rise which results from a 5-inch forward adjustment of the seat or 0.75 inches; and

(b) Direction of impact shall be either—

(1) In a vertical plane parallel to the vehicle longitudinal axis; or

(2) In a plane normal to the surface at the point of contact.

S3.2 *Seat backs.* Except as provided in S3.2.1, when that area of the seat back that is within the head impact area is impacted in accordance with S3.2.2 by a 15-pound, 6.5-inch diameter head form at a relative velocity of 15 miles per hour, the deceleration of the head form shall not exceed 80g continuously for more than 3 milliseconds.

S3.2.1 The requirements of S3.2 do not apply to rearmost, side-facing, back-

to-back, folding auxiliary jump, and temporary seats.

S3.2.2 *Demonstration procedures.* Tests shall be performed as described in Society of Automotive Engineers Recommended Practice J921, "Instrument Panel Laboratory Impact Test Procedure," June 1965, using the specified instrumentation or instrumentation that meets the performance requirements specified in Society of Automotive Engineers Recommended Practice J977, "Instrumentation for Laboratory Impact Tests," November 1966, except that—

(a) The origin of the line tangent to the uppermost seat back frame component shall be a point on a transverse horizontal line through the seating reference point of the right rear deslgnated seating position, with adjustable forward seats in their rearmost design driving position and reclinable forward seat backs in their nominal design driving position;

(b) The direction of impact shall be either—

(1) In a vertical plane parallel to the vehicle longitudinal axis; or

(2) In a plane normal to the surface at the point of contact;

(c) For seats without head restraints installed, tests shall be performed for each individual split or bucket seat back at points within 4 inches left and right of its centerline, and for each bench seat back between points 4 inches outboard of the centerline of each outboard designated seating position;

(d) For seats having head restraints installed, each test shall be conducted with the head restraint in place at its lowest adjusted position, at a point on the head restraint centerline; and

(e) For a seat that is installed in more than one body style, tests conducted at the fore and aft extremes identified by application of subparagraph (a) shall be deemed to have demonstrated all intermediate conditions.

S3.3 *Sun visors.* S3.3.1 Two sun visors shall be provided that are constructed of, or covered with energy-absorbing material.

S3.3.2 Each sun visor mounting shall present no rigid material edge radius of less than 0.125 inch that is statically contactable by a spherical 6.5-inch diameter head form.

S3.4 *Armrests*—S3.4.1 *General.* Each installed armrest shall conform to at least one of the following:

(a) It shall be constructed with energy-absorbing material and shall deflect or collapse laterally at least 2 inches without permitting contact with any underlying rigid material.

(b) It shall be constructed with energy absorbing material that deflects or collapses to within 1.25 inches of a rigid test panel surface without permitting contact with any rigid material. Any rigid material between 0.5 and 1.25 inches from the panel surface shall have a minimum vertical height of not less than 1 inch.

(c) Along not less than 2 continuous inches of its length, the armrest shall, when measured vertically in side elevation, provide at least 2 inches of coverage within the pelvic impact area.

S3.4.2 *Folding armrests.* Each armrest that folds into the seat back or between two seat backs shall either—

(a) Meet the requirement of S3.4.1; or

(b) Be constructed of or covered with energy-absorbing material.

Motor Vehicle Safety Standard No. 203

Impact protection for the driver from the steering control system—passenger cars

S1. *Purpose and scope.* This standard specifies requirements for steering control systems that will minimize chest, neck, and facial injuries to the driver as a result of impact.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.* "Steering control system" means the basic steering mechanism and its associated trim hardware, including any portion of a steering column assembly that provides energy absorption upon impact.

S4. *Requirements.*

S4.1 Except as provided in S4.2, when the steering control system is impacted by a body block in accordance with Society of Automotive Engineers Recommended Practice J944, "Steering Wheel Assembly Laboratory Test Procedure," December 1965, or an approved equivalent, at a relative velocity of 15 miles per hour, the impact force developed on the chest of the body block transmitted to the steering control system shall not exceed 2,500 pounds.

S4.2 A Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed for the

driver of any vehicle with forward control configuration that does not meet the requirements of S4.1.

S4.3 The steering control system shall be so constructed that no components or attachments, including horn actuating mechanisms and trim hardware, can catch the driver's clothing or jewelry during normal driving maneuvers.

MOTOR VEHICLE SAFETY STANDARD No. 204

STEERING CONTROL REARWARD DISPLACEMENT—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies requirements limiting the rearward displacement of the steering control into the passenger compartment to reduce the likelihood of chest, neck, or head injury.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.*

"Steering column" means a structural housing that surrounds a steering shaft.

"Steering shaft" means a component that transmits steering torque from the steering wheel to the steering gear.

S4. *Requirements.*

S4.1 Except as provided in S4.2, the upper end of the steering column and shaft shall not be displaced horizontally rearward parallel to the longitudinal axis of the vehicle relative to an undisturbed point on the vehicle more than 5 inches, determined by dynamic measurement, in a barrier collision test at 30 miles per hour minimum conducted in accordance with Society of Automotive Engineers Recommended Practice J850, "Barrier Collision Tests," February 1963.

S4.2 A Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed for the driver of any vehicle with forward control configuration that does not meet the requirements of S4.1.

MOTOR VEHICLE SAFETY STANDARD No. 205

GLAZING MATERIALS—PASSENGER CARS, MULTIPURPOSE PASSENGER VEHICLES, MOTORCYCLES, TRUCKS, AND BUSES

S1. *Purpose and scope.* This standard specifies requirements for glazing materials to reduce lacerations to the face, scalp, and neck, and to minimize the possibility of occupants being thrown through the vehicle windows in collisions.

S2. *Application.* This standard applies to glazing materials for use in passenger cars, multipurpose passenger vehicles, motorcycles, trucks, and buses.

S3. *Requirements.*

S3.1 *Materials.* Glazing materials used in windshields, windows, and interior partitions shall conform to United States of America Standards Institute "American Standard Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways," USA Standard Z26.1–1966, July 15, 1966.

S3.2 *Edges.* In vehicles, except school buses, exposed edges shall be treated in accordance with Society of Automotive Engineers Recommended Practice J673, "Automotive Glazing," June 1960, except that the minimum edge radius dimension shall be not less than one half of the nominal thickness of the glazing material. In school buses, exposed edges shall be banded.

[32 F.R. 2408, Feb. 3, 1967, as amended at 32 F.R. 10072, July 8, 1967]

MOTOR VEHICLE SAFETY STANDARD No. 206

DOOR LATCHES AND DOOR HINGE SYSTEMS—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies load requirements for door latches and door hinge systems to minimize the probability of occupants being thrown from the vehicle in a collision.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements.*

S3.1 *Door locks.* Each door shall be equipped with a locking device with an operating means in the interior of the vehicle.

S3.2 *Door hinges.* Each door hinge system shall support the door and withstand an ultimate longitudinal load of 2,500 pounds and an ultimate transverse load of 2,000 pounds.

S3.3 *Door latches.*

S3.3.1 *Longitudinal load.* The door latch and striker assembly shall withstand a longitudinal load of 2,500 pounds in the fully latched position and 1,000 pounds in the secondary latched position.

S3.3.2 *Transverse load.* The door latch and striker assembly of hinged doors shall withstand a transverse load of 2,000 pounds in the fully latched position and 1,000 pounds in the secondary latched position.

S3.3.3 *Inertia load.* The door latch shall not move from the fully latched position when a longitudinal or trans-

verse inertia load of 30g is applied to the door latch system (including the latch and its actuating mechanism).

S4. *Demonstration procedures.*

S4.1 *Door hinges.* Door hinges shall be tested in accordance with the Society of Automotive Engineers Recommended Practice J934, "Vehicle Passenger Door Hinge Systems," July 1965.

S4.2 *Door latches.* Door latches shall be tested in accordance with Society of Automotive Engineers Recommended Practice J839b, "Passenger Car Side Door Latch Systems," May 1965.

S4.3 *Inertia load.* Ability of the latch system to meet the requirements for inertia load shall be demonstrated by approved tests or in accordance with Section 5 of SAE Recommended Practice J839b, May 1965.

[32 F.R. 2408, Feb. 3, 1967, as amended at 32 F.R. 5498, Apr. 4, 1967]

Motor Vehicle Safety Standard No. 207

Anchorage of Seats—Passenger Cars

S1. *Purpose and scope.* This standard establishes requirements for seats, their attachment assemblies, and their installation to minimize the possibility of failure by forces acting on the seat as a result of vehicle impact.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements.*

S3.1 *General.* Except for folding auxiliary jump seats and sidefacing seats, each occupant seat installation shall withstand the loads specified in S3.1.1, S3.1.2, and S3.1.3.

S3.1.1 The following loads shall be applied simultaneously—

(a) Twenty times the weight of the entire seat in a forward longitudinal direction; and

(b) If the seat belt assembly is directly attached to the seat, the total load imposed on the seat by simultaneous application of maximum loads required by Motor Vehicle Safety Standard No. 209 for all attached seat belt assemblies.

S3.1.2 A load equal to 20 times the weight of the entire seat shall be applied in a rearward longitudinal direction.

S3.1.3 A load equal to a 3,300 inch pound moment about the "H" point for each occupant position for which the seat is designed shall be applied to the upper cross member in a rearward longitudinal direction.

S3.2 The seat adjusters need not be operable after the application of the loads specified in S3.1.1, S3.1.2, and S3.1.3.

S3.3 *Folding and hinged seats.* Except for folding auxiliary seats and seats with backs which are adjustable for occupant comfort only, a hinged or folding seat or seat back shall be equipped with a self-locking, restraining device and a control for releasing the restraining device.

S3.3.1 The release control shall be readily accessible to the occupant of that seat and to the occupant of any seat immediately behind that seat, and shall be constructed to preclude inertial release when loaded longitudinally to 20g.

S3.3.2 The restraining device shall not release or fail when a forward longitudinal load equal to 20 times the weight of the entire seat back is applied at the center of gravity of the seat back.

S4. *Demonstration procudures.*

S4.1 Dynamic or static testing techniques may be used.

S4.2 Static testing of seats shall be conducted in accordance with Society of Automotive Engineers Recommended Practice J879, "Passenger Car Front Seat and Seat Adjuster," November 1963, using the values specified in and the procedures applicable to this standard.

S4.3 Distributed loads may be replaced by concentrated loads at the loading centroid.

Motor Vehicle Safety Standard No. 208

Seat Belt Installations—Passenger Cars

S1. *Purpose and scope.* This standard establishes requirements for seat belt installations.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements.*

S3.1 Except as provided in S3.1.1 and S3.1.2, a Type 1 or Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed in each passenger car seat position.

S3.1.1 Except in convertibles a Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed in each outboard passenger car seat position that includes the windshield header within the head impact area.

S3.1.2 The requirements of S3.1 do not apply to folding auxiliary jump seats, side-facing seats, and rearfacing seats.

MOTOR VEHICLE SAFETY STANDARD NO. 209

SEAT BELT ASSEMBLIES—PASSENGER CARS, MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, AND BUSES

S1. *Purpose and scope.* This standard specifies requirements for seat belt assemblies.

S2. *Application.* This standard applies to seat belt assemblies for use in passenger cars, multipurpose passenger vehicles, trucks, and buses.

S3. *Requirements.* Seat belt assemblies shall meet the requirements of Department of Commerce, National Bureau of Standards, *Standards for Seat Belts for Use in Motor Vehicles* (15 CFR Part 9; 31 F.R. 11528), using the attachment hardware specified in paragraph (f) of 15 CFR 9.3 or approved equivalent hardware.

Standards for Seat Belts for Use in Motor Vehicles (15 CFR 9) (31 F.R. 11528).

This Standard supersedes Department of Commerce, National Bureau of Standards, *Standards for Seat Belts for Use in Motor Vehicles* (15 CFR 9) (30 F.R. 8432).

[32 F.R. 2408, Feb. 3, 1967, as amended at 32 F.R. 3390, Mar. 1, 1967]

MOTOR VEHICLE SAFETY STANDARD NO. 210

SEAT BELT ASSEMBLY ANCHORAGES—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies the requirements for seat belt assembly anchorages to ensure proper location for effective occupant restraint and reduce the likelihood of failure in collisions.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.*

"Seat belt anchorage" means the provision for transferring seat belt assembly loads to the vehicle structure.

S4. *Requirements.*

S4.1 *Type.* Except as provided in S4.1.1 and S4.1.2, anchorages for a Type 1 or Type 2 seat belt assembly, as applicable, shall be provided for each designated seating position in accordance with Table I.

S4.1.1 Anchorages for either a Type 1 or Type 2 seat belt assembly shall be provided for each designated seating position in a convertible.

S4.1.2 Anchorages need not be provided for folding, auxiliary jump seats.

TABLE I

Seating position		Seat belt assembly required
Forward-facing seat	Outboard	Type 2.
	Inboard	Type 1.
Rearward-facing seat.	Outboard and inboard.	Type 1.
Side-facing seat		Type 1.

S4.2 *Strength.*

S4.2.1 When tested in accordance with S5.1 or an equivalent dynamic test, no anchorage shall fail when a 5,000 pound load is applied to the body block.

S4.2.2 When tested in accordance with S5.2 or an equivalent dynamic test, no anchorage shall fail when a 3,000 pound load is applied to the pelvic body block together with a 3,000 pound load on the upper torso body block.

S4.2.3 Permanent deformation, including rupture or breakage, of any anchorage or surrounding area shall not constitute failure if the required load is attained.

S4.2.4 Except as provided in S4.2.5, belt assemblies having a common anchorage shall be tested simultaneously.

S4.2.5 Common anchorages for forward and rearward facing seating positions shall not be tested simultaneously.

S4.3 *Location.*

S4.3.1 *Type 1 and pelvic portion of Type 2 seat belt assembly anchorages.*

S4.3.1.1 For installations in which the belt passes around the outside of the seat, a line from the anchorage to the occupant's "H" point shall make an angle with the horizontal as near as practicable to 45 degrees with the seat at the midpoint of its adjustment range.

S4.3.1.2 For installations in which the belt passes through the springs or over the seat frame, the anchorage shall be aft of the rearmost position of the springs or seat bottom frame rear bar and the angle between the horizontal and the line of the belt from the occupant's "H" point with the belt snug, but not loaded, shall be as near as practicable to 45 degrees.

S4.3.1.3 Anchorages for an individual seat belt assembly shall be located, as near as practicable, 15 inches apart laterally.

S4.3.2 *Type 2 upper torso seat belt assembly anchorages.*

S4.3.2.1 With the seat in its rearmost driving position, and the seat back in its nominal design driving position, the anchorage for the upper end of the upper

torso restraint shall be to the rear of a line extending 6 inches vertically above the shoulder reference point of the two-dimensional manikin described in Society of Automotive Engineers Standard J826, "Manikins for Use in Defining Vehicle Seating Accommodation," November 1962, and then extending rearward at an angle of 80 degrees above the horizontal. If the angle of the upper torso restraint passing from the shoulder of a seated 95th percentile adult male to the anchorage, or to a structure between the shoulder point and the anchorage, is downward from the horizontal, it shall be not more than 40 degrees.

S5. *Demonstration procedures.*

S5.1 *Seats with Type 1 or Type 2 seat belt anchorages.* With the seat in its rearmost position, the load specified in S4.2.1 shall be applied at an angle of 5 degrees or more, but less than 15 degrees above the horizontal to an appropriate body block restrained by a Type 1 or pelvic portions of a Type 2 seat belt assembly, as applicable.

S5.2 *Seats with Type 2 seat belt anchorages.* With the seat in its rearmost position, the load specified in S4.2.2 shall be applied at an angle of 5 degrees or more but less than 15 degrees above the horizontal to an appropriate body block restrained by a Type 2 seat belt assembly.

[32 F.R. 2408, Feb. 3, 1967, as amended at 32 F.R. 10073, July 8, 1967]

MOTOR VEHICLE SAFETY STANDARD NO. 211

WHEEL NUTS, WHEEL DISCS, AND HUB CAPS—PASSENGER CARS AND MULTIPURPOSE PASSENGER VEHICLES

S1. *Purpose and scope.* This standard precludes the use of wheel nuts, wheel discs, and hub caps that constitute a hazard to pedestrians and cyclists.

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, and passenger car and multipurpose passenger vehicle equipment.

S3. *Requirements.* Wheel nuts, hub caps, and wheel discs for use on passenger cars and multipurpose passenger vehicles shall not incorporate winged projections.

MOTOR VEHICLE SAFETY STANDARD NO. 301

FUEL TANKS, FUEL TANK FILLER PIPES, AND FUEL TANK CONNECTIONS—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies requirements for the integrity and security of fuel tanks, fuel tank filler pipes, and fuel tank connections to minimize fire hazard as a result of collision.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements.* When tested in accordance with S4:

(a) Fuel tank filler pipes, fuel tank connections to fuel lines, and fuel tanks filled to at least 90 percent of capacity with a liquid having substantially the same viscosity as, and specific gravity no less than, the fuel used in the vehicle, shall not discharge fluid at a rate greater than 1 ounce (by weight) per minute after termination of impact.

(b) Fluid losses during impact shall not exceed 1 ounce (by weight).

S4. *Demonstration procedures.* A front end longitudinal barrier collision test shall be conducted at a speed of at least 30 miles per hour in accordance with Society of Automotive Engineers Recommended Practice J850, "Barrier Collision Test," February 1963.

Appendix A—Interpretations

CONTROLS AND REARVIEW MIRRORS

MOTOR VEHICLE SAFETY STANDARD NO. 101

CONTROL LOCATION AND IDENTIFICATION—PASSENGER CARS

The requirement of paragraph S3.2 that specified controls shall be identified to permit recognition may be met with words or symbols and need only be demonstrated under daylight lighting conditions.

MOTOR VEHICLE SAFETY STANDARD NO. 105

HYDRAULIC SERVICE BRAKE, EMERGENCY BRAKE, AND PARKING BRAKE SYSTEMS—PASSENGER CARS

(1) The definition of the term "emergency brake" contained in § 255.3(b) does not refer to a system that would provide a means of bringing a vehicle to a stop after a total failure of the entire hydraulic service brake system, since paragraph S4.2 of the Standard provides that rupture or leakage-type failure of any single pressure component of the service brake system, except structural failures of the brake master cylinder body or effectiveness indicator body shall not result in complete loss of function of the vehicle brakes when force on the brake pedal is continued.

(2) Paragraph S4.2.1 applies to loss of pressure in a part of the brake system resulting from failure of a pressure component or insufficient hydraulic fluid in that part of the system.

(3) The requirement of paragraph S4.2.2 that an indicator light illuminate before or upon application of the brakes in the event of a hydraulic-type complete failure of a

partial system may be met with a master cylinder reservoir level indicator light or system pressure indicator light. The indicator light need not illuminate during that application of brake pressure that contributed to the failure.

MOTOR VEHICLE SAFETY STANDARD No. 108

LAMPS, REFLECTIVE DEVICES, AND ASSOCIATED EQUIPMENT—MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, 80 OR MORE INCHES WIDE OVERALL

The term "overall width" refers to the nominal design dimension of the widest part of the vehicle, exclusive of signal lamps, marker lamps, outside rearview mirrors, flexible fender extensions, and mud flaps, determine with doors and windows closed, and the wheels in the straight-ahead position.

This supersedes the interpretation of the term "overall width" appearing in the FEDERAL REGISTER of March 1, 1967 (32 F.R. 3390).

MOTOR VEHICLE SAFETY STANDARD No. 111

REARVIEW MIRRORS—PASSENGER CARS AND MULTIPURPOSE PASSENGER VEHICLES

(1) When a supplemental mirror is furnished in addition to the inside rearview mirror and the driver's side outside rearview mirror, the supplemental mirror need not be adjustable from the driver's seat.

(2) The location of the driver's eye reference point may be that established in Motor Vehicle Safety Standard No. 104, or it may be a nominal location appropriate for any 95th percentile male driver.

(3) The horizontal angle is measured from the projected eye point, rather than the plane of the mirror.

MOTOR VEHICLE SAFETY STANDARD No. 203

IMPACT PROTECTION FOR THE DRIVER FROM THE STEERING CONTROL SYSTEM—PASSENGER CARS

The term "jewelry" in paragraph S4.3 refers to watches, rings, and bracelets without loosely attached or dangling members.

MOTOR VEHICLE SAFETY STANDARD No. 204

STEERING CONTROL REARWARD DISPLACEMENT—PASSENGER CARS

When conducting the barrier collision test, a driver dummy may be used without measuring the impact force developed on the chest.

In the event that the vehicle impacts the barrier at a velocity not less than 30 miles per hour nor more than 33 miles per hour, the displacement of the steering column may be corrected to 30 miles per hour by means of the following formula:

$$\frac{D_1}{D_2}=\frac{V_1^2}{V_2^2}$$

MOTOR VEHICLE SAFETY STANDARD No. 208

SEAT BELT INSTALLATIONS—PASSENGER CARS

(1) The words "passenger car seat position" in paragraphs S3.1 and S3.1.1 refer to designated permanent seating positions, rather than fixed or folding jump-type seats.

(2) A Type 2a shoulder belt (upper torso restraint) when used in conjunction with a Type 1 seat belt assembly (pelvic restraint) provides the equivalent of a Type 2 seat belt assembly whether three or four seat belt assembly anchorages are used. Therefore, any requirement for a Type 2 seat belt assembly may be met with a Type 2a shoulder belt used in conjunction with a Type 1 seat belt assembly.

MOTOR VEHICLE SAFETY STANDARD No. 209

SEAT BELT ASSEMBLIES—PASSENGER CARS, MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, AND BUSES

This Standard applies to seat belt assemblies manufactured after February 28, 1967, for use in passenger cars, multipurpose passenger vehicles, trucks and buses. Since the effective date of Motor Vehicle Safety Standard No. 208, which provides that a Type 1 or Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed in each passenger car seat position, is January 1, 1968, seat belt assemblies installed in passenger cars until that date need not conform to Standard No. 209 unless the seat belt assemblies have been manufactured after February 28, 1967.

[32 F.R. 3390, Mar. 1, 1967, as amended at 32 F.R. 5499, Apr. 4, 1967; 32 F.R. 8808, June 21, 1967]